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WIC Nutrition Education Assessment Study

Final Report

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**WIC NUTRITION
EDUCATION
ASSESSMENT STUDY**

Final Report

February 1999

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Acknowledgments

The WIC Nutrition Education Assessment Study is indebted to WIC staff and participants in the six local agencies who supported the study through all of its phases. Without their cooperation, the study could not have been implemented. Thanks are also due to staff in the three State WIC offices who provided information on State policies and procedures as well as information on local agency caseloads, both of which were critical in identifying potential sites for the study.

Staff of the Office of Analysis and Evaluation, Food and Nutrition Service, U.S. Department of Agriculture provided oversight for the study. The Project Officer, Janet Tognetti Schiller, oversaw all stages of project planning and implementation and guided development of study reports. Jay Hirschman also made valuable contributions to study design. Staff from the WIC Division (J.P. Passino) and the Nutrition and Technical Services Division (Donna Blum) reviewed and critiqued study plans and reports.

The study was assisted by Laura Sims, a consultant who played a key role in the start-up phase of the project, and a Technical Advisory Group comprised of Christine Olson, Yvonne Bronner, and Jane Peacock. These individuals made valuable contributions to the development of study instruments and also reviewed and critiqued the final report.

Finally, several staff members at Abt Associates played important roles on the project. Mary Kay Fox served as Project Director during the final three years of the study. Michael Puma was Project Director for first two and one-half years of the project. Other key Abt staff include Mary Ann Hartnett (Survey Director), Karin Carter and Gary Donzelli (Assistant Survey Directors), Connie Hare and Lynne McKenzie (Field Managers), Nancy Burstein (Director of Analysis), Gus Baker, Amy Fowler, Stephanie Gluckman, Jenny Golay, Robert Kornfeld, and Cristopher Price (Analysts), and Leiming Lee and Don Laliberty (Programmers). Eileen Fahey and Tracy Olcott served as contract secretaries and, in this capacity, coordinated production of all study reports.

Executive Summary

The WIC Nutrition Education Assessment Study was conducted by Abt Associates Inc. of Cambridge, Massachusetts, under contract with the Food and Nutrition Service (FNS) of the United States Department of Agriculture (USDA). The study was designed by FNS to fill several important gaps in information about the nutrition education component of the WIC Program. It was not designed to be a "best practices" study, nor was it meant to provide a nationally representative picture of nutrition education in the WIC Program. Rather, the study was exploratory in nature and examined processes and outcomes in six local WIC agencies that serve different populations and use a variety of different approaches to providing nutrition education. Findings from the study are intended to provide a focus for future research in this area.

The study is unique in that it used a longitudinal design, i.e., repeated measures from the same group of WIC participants over a period of time. In addition, the study employed a mixed-method approach to data collection that allowed for collection of comparable data from different sources. This feature provides broad coverage of important issues from different perspectives.

Six local WIC agencies participated in the study which focused on pregnant and postpartum WIC participants. A separate report describes the nutrition-related knowledge, attitudes, and behaviors of study subjects at the time they enrolled in WIC (Fox, M.K., et al., 1998). This report describes the nutrition education services offered in study sites, participants' receipt of and satisfaction with these services, and changes in participants' knowledge, attitudes, and behaviors between the time of prenatal WIC certification and four-to-six-months postpartum.

Overview of the Study

The study had four key research objectives:

- To assess pregnant women's nutrition-related knowledge, attitudes, and self-reported behaviors at the time of WIC enrollment.
- To describe the processes used by local agencies in delivering WIC nutrition education to pregnant and postpartum women and the type and amount of nutrition education actually received by these participants.
- To assess participants' satisfaction with WIC nutrition education services, materials, and staff.
- To the extent possible, to assess the impact of WIC nutrition education on participants' knowledge, attitudes, and behaviors.

The impact study encompassed in the study's fourth objective was exploratory in nature. Because program policies precluded establishment of a true control group, i.e., a group of WIC participants to whom WIC nutrition education services were not offered, a quasi-experimental design was used.

Although the design does not permit a definitive assessment of the impact of WIC nutrition education, nor yield results that are generalizable to the WIC population nationwide, the study does provide useful insights about the potential magnitude and direction of changes in participants' knowledge, attitudes, and behaviors over time. Moreover, because the demographic characteristics of the study sample were quite similar to those of pregnant WIC participants nationwide, study findings have broad relevance for the WIC Program.

Participating Local Agencies

Six local agencies, located in three different States (two agencies per State), participated in the study. Sites were purposefully selected to include a variety of approaches to the delivery of WIC nutrition education, as well variability in community type (urban *versus* rural) and ethnic and cultural backgrounds of WIC participants.

Sample Recruitment

Newly enrolling pregnant women were recruited into the study just prior to WIC certification. A newly enrolling pregnant woman, while just being certified for her current pregnancy, may have participated in WIC during previous pregnancies and/or as caretaker of an infant or child WIC participant. To ensure that baseline information was collected before women received any nutrition education for their current pregnancy, recruitment and baseline interviews were completed *before* women met with any WIC staff.

Data Collection

Sample members were interviewed three times. The baseline survey was completed at the time of prenatal WIC certification. The first follow-up survey (prenatal survey) was completed at 32-36 weeks gestation and the second (postpartum survey) was completed four to six months postpartum. Identical measures of nutrition knowledge, attitudes, and behavior were included in all three surveys. Follow-up surveys also included questions about experiences and satisfaction with WIC nutrition education.

In addition, data were abstracted from WIC records to ascertain the number and type of nutrition education contacts provided to study respondents during prenatal and postpartum certification periods. Finally, to supplement background information provided by local agency directors and obtain a "real world" picture of WIC nutrition education, a limited number of nutrition education contacts were observed in each site.

Key Findings

Characteristics of Nutrition Education Offered in Study Sites

- Methods used to deliver nutrition education varied considerably across sites, including use of individualized counseling for all nutrition education contacts and use of a newsletter (distributed by voucher clerks) for follow-up contacts with low-risk women.
- Four of the six study sites experienced problems with participant no-shows for follow-up contacts. The problem was quite significant in two sites, so much so that local agency

directors ultimately implemented procedures specifically designed to ensure that participants receive a second prenatal contact.

- A majority of sample members were certified for postpartum participation. Most certified during the six-week transition period allowed after the birth of the baby. The proportion of women who did *not* recertify in one site was notably higher than the other sites. This may be because women were required to attend separate certification appointments for themselves and their infants. The five other sites used joint appointments that allowed both certifications to be completed at the same time.
- The quality of staff/participant interactions was generally quite high. WIC nutrition educators did an excellent job of addressing participants' questions or concerns in a supportive manner; providing opportunity for questions; offering specific and appropriate ideas on how to implement recommended behaviors (e.g., ways to increase milk consumption other than drinking milk as a beverage); maintaining nonjudgmental attitudes; and providing positive feedback on current dietary intake (i.e., highlighting positive aspects of participants' current behaviors before discussing needed improvements).

At the same time, staff in five of the six sites frequently did not assess participants' understanding of the information being communicated or attempt to determine whether there were barriers that might affect a participant's ability to adopt a recommended behavior. Staff in four of the six sites often did not ask about participants' willingness to make a recommended behavior change. And, in three sites, WIC staff tended to assign, rather than negotiate, goals for behavior change. Use of group contacts (classes) did not preclude these desirable interactions, nor did use of individual contacts ensure them.

- With one exception, the physical environment in which nutrition education was delivered was appropriate and comfortable.
- The topics covered in WIC nutrition education contacts were generally consistent with expectations. Most of the concepts included in the nutrition knowledge measure developed for this study received widespread or moderate coverage. Certification contacts tended to cover a broad array of topics, with an emphasis on content of the WIC food package and, for prenatal certifications, recommended eating practices during pregnancy. Follow-up contacts tended to focus on a single or more limited number of concepts. In follow-up prenatal contacts, the most frequent topic was recommended weight gain during pregnancy.
- Referrals to health and social services were relatively rare. Because referrals are supposed to be tailored to the individual needs of a participant, the absence of a referral does not necessarily imply that a needed referral was missed. The data suggest that the number and type of referrals offered in local WIC agencies is more reflective of the context or local environment in which programs operate, i.e., the extent to which participants are already hooked into needed programs and services before entry into WIC, than of the quality of nutrition education offered to program participants.

Participants' Receipt of Nutrition Education Contacts

- According to data from WIC administrative records, a majority of respondents (80-97% across all study sites) had the opportunity to receive two nutrition education contacts between prenatal certification and the birth of their babies. The extent to which this goal was achieved varied across sites, and the pattern observed was entirely consistent with findings from on-site observations of nutrition education contacts. The percentage of women in each site who received two contacts during the prenatal period ranged from a high of 92 percent to a low of 24 percent.

The two sites that were most successful in providing two prenatal contacts used tri-monthly voucher issuance which, in theory, decreases the number of contact opportunities. No-show rates for follow-up nutrition education contacts were substantially lower in these two sites, as reported by local agency directors and documented during on-site observations.

- Although virtually all study subjects had the opportunity to receive two nutrition education contacts between postpartum certification and the time WIC record abstract data were collected (approximately six months postpartum), a large proportion received only one contact (the certification contact). The maximum percentage for receipt of two nutrition education contacts was 59 percent. The minimum was five percent.
- Respondent self-reports regarding information and advice received from WIC staff were largely consistent with findings from on-site observations. In general, topics that received widespread coverage in the on-site observations were reported frequently and topics that received less coverage were reported less frequently.
- Respondents reported few referrals from WIC staff. This finding is consistent with the on-site observations. Because most study sites did not record information about referrals in WIC records, it was not possible to cross-check participant self-reports with administrative data.
- The following types of women were significantly *less likely* to receive a second prenatal contact: women who had previously been pregnant but not enrolled in WIC; women who enrolled in their third trimester; and women who smoked. The following types of women were significantly *more likely* to receive a second prenatal contact: previous WIC participants; women with higher overall nutrition knowledge scores at baseline; women who reported regular use of prenatal vitamins; and women who were planning to breastfeed for at least six months at the time of WIC enrollment.

These data suggest that the women most likely to return for follow-up prenatal nutrition education contacts are those who already have higher levels of nutrition knowledge and, to some extent, already exhibit desirable health behaviors. Conversely, women who are theoretically most in need of services, e.g., those who enroll late in pregnancy and those who smoke, are less likely to return for a second prenatal contact.

Changes in Knowledge, Attitudes, and Behaviors Over Time

Nutrition Knowledge

- With the exception of one site that served a large population of recent immigrants, participants entered WIC with reasonably high levels of nutrition knowledge. Overall knowledge scores increased significantly in all sites between the baseline and prenatal surveys. Gains persisted through the postpartum survey and, in most sites, actually increased by a modest amount.

The content areas that showed the greatest improvement were knowledge related to breastfeeding and knowledge related to recommended infant feeding practices. Mean scores for two other two content areas (general nutrition knowledge and healthy practices during pregnancy) also improved, however, changes were less substantial and did not always reach statistical significance. Overall, the pattern of change seen in these data is consistent with the notion that WIC nutrition education is effective in communicating key nutrition concepts to program participants. The two content areas in which gains were most substantial (breastfeeding and recommended infant feeding practices) were those in which women showed lower levels of baseline knowledge *and* which on-site observations and participant self-reports showed to be well covered in WIC nutrition education contacts.

- In five of the six study sites, women who participated in WIC during a previous pregnancy had significantly higher baseline knowledge scores than women with no prior WIC experience. These differences were largely attributable to differences in scores for breastfeeding knowledge (three sites) and knowledge about recommended infant feeding practices (five sites) — the two content areas that showed the most substantial gain in this study. This finding suggests that at least some of the gains in nutrition knowledge described in the preceding section may be attributable to WIC nutrition education.

Attitudes and Perceptions

- Five measures of nutrition-related attitudes and perceptions were included in the study. In general, changes over time, although statistically significant, were numerically small. The practical significance of these small changes is unclear. The general pattern observed in the data was no change to a modest improvement in attitudes and perceptions during the prenatal period followed by a decline during the postpartum period. Postpartum scores generally approximated or were less than baseline scores.
- Infant feeding preference scores (a measure of a woman's relative openness to breastfeeding) improved in four of the six study sites between the baseline and prenatal surveys. Nonetheless, the percentage of women who actually initiated breastfeeding was not significantly different from the percentage who entered the WIC Program already intending to breastfeed.

Nutrition-related Behaviors

- With one exception, use of prenatal vitamins and iron supplements increased significantly between the baseline survey and the prenatal survey.
- Reported daily consumption of milk, 100% fruit juice, and WIC cereals increased significantly in all six study sites between the baseline and prenatal surveys. Reported consumption of cheese, as well as peanut butter and dried beans, peas, and lentils, increased in four sites. Reported consumption of eggs increased in three sites. Only the increased consumption of WIC cereals was maintained into the postpartum period. Differences in the composition of food packages provided to prenatal and postpartum participants may contribute to differences in reported consumption of WIC foods.
- Most women followed recommended infant feeding guidelines during the earliest months of life, however, some women offered their infants inappropriate fluids (primarily sweetened water) or solids (primarily infant cereal) before the age of two months. The percentage of women who offered inappropriate fluids before two months of age ranged from a low of five percent to a high of 27 percent. The percentage who offered solid foods before two months ranged from three percent to 18 percent.
- The prevalence of undesirable infant feeding practices increased sharply for older infants. More than 40 percent of women in each site offered their babies something other than breastmilk, formula, or plain water before the age of 4 months. In several sites, two-thirds to three-quarters of the respondents reported this behavior. Use of solids (primarily infant cereal) before 4 months of age was also a common practice (minimum of 39 percent and a maximum of 67 percent). In all but one site, roughly one-third of the respondents offered their infants something that is considered completely inappropriate for infants of any age (e.g., cows' milk, fruit drinks, sodas, or desserts) or not appropriate until at least 6 months of age (e.g., fruits or vegetables, meats, or whole eggs).

Other Behaviors

- Many women who smoked cigarettes prior to pregnancy reportedly quit after becoming aware of their pregnancy and before enrolling in WIC. Nonetheless, in all but one site (where very few women smoked even before pregnancy), 20 to 41 percent of women reported using cigarettes at the time of the baseline survey. At the time of the prenatal survey, the prevalence of cigarette use was significantly lower in two of these five sites.

A majority of women who stopped smoking before or after WIC certification resumed the habit by the time of the postpartum survey. In all six sites, the percentage of women using cigarettes at the time of the postpartum survey was significantly greater than at baseline. Although cigarette use had not returned to pre-pregnancy levels, there was a definite trend in this direction.

- Most women who used alcohol prior to pregnancy reportedly discontinued this practice prior to WIC certification. With one exception, fewer than ten percent of women reported use of alcohol at the time of the baseline interview. Over the course of prenatal WIC

participation, use of alcohol decreased further (and significantly) in two sites. In the other four sites, the value of the estimates shifted somewhat, sometimes up and sometimes down, but the differences were not statistically significant.

By the time of the postpartum survey, many women had resumed use of alcohol. In all six sites, the percentage of respondents who reported use of alcohol during the postpartum period was significantly greater than at baseline but still substantially lower than prior to pregnancy.

- More than 70 percent of respondents in each site entered WIC already following the recommendation that over-the-counter medications should be taken only with physician approval. Nonetheless, adherence to the recommendation increased significantly in all sites between the baseline and prenatal surveys, reaching levels of 82 to 97 percent.

Participants' Satisfaction with WIC Nutrition Education

- Virtually all respondents reported receiving written nutrition education materials. At the time of the prenatal survey, three-quarters or more of the respondents in each site reported reading all or most of the materials provided. Another ten to 23 percent of respondents reported reading some of the written materials. Two percent or less of the respondents indicated that they did not read any of the materials. The overall pattern of responses was similar for the postpartum survey data.
- Women who reported reading at least some of the written materials provided by WIC were asked to rate the relative usefulness of the materials. More than half of the prenatal survey respondents in each site rated the written materials as either extremely useful or useful. With one exception, roughly a third of the respondents in each site found written materials to be only somewhat useful and a small percentage (2-3%) judged the materials to be not very useful or useless. Again, the overall pattern of responses was similar for the postpartum survey data.
- More than 60 percent of prenatal survey respondents who attended a nutrition education class rated the class(es) as either very interesting or interesting. Postpartum assessments were somewhat more positive in two sites and somewhat more negative in three sites.
- With one exception (the site with a large population of recent immigrants), five percent or less of the respondents reported that they had questions or concerns that had not been addressed by WIC staff. In the site with the large immigrant population, the percentage of women who reported an unmet information need at the time of the prenatal survey (12%) was more than twice that of any other site. By the time of the postpartum survey, the prevalence of this problem had dropped considerably and was comparable to other study sites. This pattern suggests that language and/or cultural barriers may have complicated, but did not impede, communication of nutrition education messages in this site.

- Participants were asked directly whether they learned anything from WIC ("Did you learn anything that you did not know before you visited the WIC Program?"). In most sites, less than half of the prenatal survey sample responded affirmatively. Results for the postpartum survey were similar.
- Respondents who reported learning something from WIC were asked to identify what was learned. Responses were consistent with findings regarding topics covered in WIC nutrition education. The topic areas in which most respondents reported knowledge gain were recommended eating practices during pregnancy and breastfeeding.
- Respondents' self-reports about knowledge gain also corresponded well with changes in both nutrition knowledge scores and infant feeding preference scores. Although knowledge scores increased significantly over time for both self-described learners and non-learners, respondents who said they learned something from WIC (self-described learners) gained significantly more knowledge than respondents who said they did *not* learn anything from WIC (self-described non-learners). Mean overall knowledge scores for self-described learners increased 6.8 percentage points between baseline and prenatal surveys, compared to 4.5 percentage points for self-described non-learners. Likewise, between the baseline and postpartum surveys, overall knowledge scores increased 8.8 points for self-described learners compared to 6.3 percentage points for self-described non-learners. A similar pattern was noted for the infant feeding preference score.

These data indicate that both learners and non-learners increased their nutrition knowledge over the course of the study. The fact that participants who reported learning something from WIC showed significantly greater gains in knowledge than participants who said they did not learn anything from WIC suggests that, for these participants, at least some of the knowledge gain realized over time is attributable to WIC nutrition education.

- Respondents were asked to identify up to three things they liked about the WIC Program and up to three things they disliked. WIC supplemental foods ranked as the leading positive program attribute in all six sites in both prenatal and postpartum surveys. This was the only program characteristic that was consistently included in the top three positive aspects of the WIC Program.

The next most frequently cited positive feature, included among the top three in four of the six sites, was that the WIC Program/WIC staff care(s) about participants. An argument can easily be made that the nutrition education component of the program plays a role in generating this perception. Other program characteristics that vied for third place on the top-three list for all sites combined included "learn about healthy eating," "talking to the nutritionist," and "talking with other WIC staff." All three of these features are clearly related to the nutrition education component of the WIC Program.

- Respondents in most sites found it more difficult to identify unfavorable aspects of the WIC Program than favorable aspects. With one exception, more than two-thirds of the

prenatal respondents and more than half of the postpartum respondents were unable to identify anything they did not like about WIC.

- Respondents were asked to provide specific suggestions for improving WIC nutrition education, however, relatively few respondents were able to offer specific suggestions. In the prenatal survey, suggestions were offered by four to 15 percent of respondents. The range for the postpartum survey was three to 19 percent. Among respondents who did offer suggestions, recommendations most often related to improving the content and/or delivery of nutrition education. Specific recommendations included increasing the amount of individualized contact and increasing participants' awareness of, or opportunities for, nutrition education.
- Responses to a battery of items designed to assess program satisfaction indicate that, overall, the vast majority of respondents in all six study sites were quite satisfied with WIC nutrition education. In five of the six sites, more than 90 percent of prenatal and postpartum respondents found WIC staff to be helpful as well as warm and friendly; believed that WIC staff respected them as individuals; found explanations offered by WIC staff to be readily understandable; had their questions answered; felt satisfied when they left the WIC clinic; and found the information offered to be helpful. Likewise, more than 90 percent of respondents in five of six sites, did *not* feel confused when they left the WIC clinic.
- Although the overall picture of participant satisfaction was highly positive, respondents did identify some areas of dissatisfaction. Five to 37 percent of respondents reported a concern about the waiting time at WIC clinics (agreed or strongly agreed with the statement "The staff made me wait too long"). The percentage of respondents who said they had to wait too long increased between the prenatal survey and the postpartum survey in five of the six study sites.

Another area of dissatisfaction was the fact that some of the information and guidance provided by WIC staff conflicted with information provided by physicians (agreed or strongly agreed with the statement "Some of the advice I received contradicted what my doctor told me"). At the time of the prenatal survey, the percentage of respondents reporting such conflicts, ranged from 15 to 24 percent. Contradictory advice most often involved advice related to weight gain during pregnancy; the need for iron supplements (i.e., whether or not a respondent was anemic); and breastfeeding.

The prevalence of contradictory advice from physicians increased in the postpartum survey (range from 24% to 47%). Conflicts during the postpartum period most often involved breastfeeding — with WIC staff encouraging breastfeeding and local physicians either downplaying or actually discouraging breastfeeding.

- Analyses that explored relationships between overall satisfaction (a composite measure), individual measures of satisfaction, and participants' experiences with WIC nutrition education revealed that characteristics of women's nutrition education experiences may influence their overall level of satisfaction with the WIC Program. The following types

of self-reported experiences were associated with significantly higher levels of overall satisfaction: strongly agreed that counselors helped in decision about how to feed the baby; strongly *disagreed* that WIC staff made them wait too long; strongly *disagreed* that advice given by WIC staff was contradictory to advice given by physician; thought written nutrition education materials were useful or very useful; and did not have any outstanding issues/questions to discuss with a nutritionist. In addition, two factors—*not* having been referred to health or social services and *not* learning anything new from WIC—were associated with slightly lower levels of overall satisfaction.

Chapter 1

Introduction

The WIC Nutrition Education Assessment Study was conducted by Abt Associates Inc. of Cambridge, Massachusetts, under contract to the Food and Nutrition Service (FNS) of the United States Department of Agriculture (USDA). The study was designed by FNS to fill several important gaps in information about the nutrition education component of the WIC Program. It was not designed to be a "best practices" study, nor was it meant to provide a nationally representative picture of nutrition education in the WIC Program. Rather, the study was exploratory in nature and examined processes and outcomes in six local WIC agencies that serve different populations and use a variety of different approaches to providing nutrition education. Findings from the study are intended to provide a focus for future research in this area.

The study is unique in that it used a longitudinal design, i.e., repeated measures from the same group of WIC participants over a period of time. In addition, the study employed a mixed-method approach to data collection that allowed for collection of comparable data from different sources. This feature provides broad coverage of important issues from different perspectives.

Six local WIC agencies participated in the study, which focused on pregnant and postpartum WIC participants. A separate report describes the nutrition-related knowledge, attitudes, and behaviors of study subjects at the time they enrolled in WIC (Fox, M.K., et al., 1998). This report describes the nutrition education services offered in study sites, participants' receipt of and satisfaction with these services, and changes in participants' knowledge, attitudes, and behaviors between the time of prenatal WIC certification and four-to-six-months postpartum. The report also presents results of several exploratory analyses that examine the influence of exogenous attitudinal and social factors on behaviors of key interest to WIC nutrition educators — particularly the initiation and duration of breastfeeding. Findings from these analyses may be useful in focusing or targeting nutrition education efforts.

The WIC Program

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) is a Federal nutrition assistance program that provides supplemental food, nutrition education, and referral to health care and social services to low-income women who are pregnant, postpartum, or breastfeeding; infants; and preschool children who are at nutritional risk. The WIC Program is designed to serve as an adjunct to good health care during critical periods of growth and development, and to counteract the potentially deleterious effects of poverty. In fiscal year (FY)1997, approximately 23 percent of WIC participants were pregnant, postpartum, or breastfeeding women.

Program Administration

WIC is administered by FNS and operates in all fifty States, the District of Columbia, Puerto Rico, Guam, American Samoa, the American Virgin Islands, and in 33 Indian tribal organizations (ITOs).

Eighty-eight State agencies and more than 2,200 local agencies provide services to participants through more than 10,000 service sites. Local WIC agencies are often city or county health departments, but a variety of public or nonprofit health or human services organizations, such as hospitals, maternal and child health agencies, or community action agencies, also serve as local WIC agencies. In FY 1997, WIC served more than 7.4 million participants per month at an annual cost of \$3.8 billion.

Participant Eligibility

Eligibility for WIC is based on four factors. First, a participant must be a resident of the State in which she or he applies for benefits. Second, a participant must be a member of certain categorically eligible groups: pregnant women; postpartum non-breastfeeding women; breastfeeding women; infants; and children up to 5 years of age.

Third, a participant must be income-eligible. The specific income limit for eligibility is set by each State Agency; however, it must not exceed 185 percent, nor be less than 100 percent, of the Federal Poverty Income Guidelines, based on family size. As of July 1998, at the 185 percent threshold, a person from a family of four with an annual household income of \$30,433 or less would be income-eligible for WIC.¹ In addition, applicants automatically meet WIC's income eligibility requirement if they are eligible to receive food stamps, Medicaid, or Temporary Assistance for Needy Families (TANF), or if certain members of their family are eligible to receive Medicaid or TANF.

Finally, a participant must be determined to be at nutritional risk based on a medical and/or nutritional assessment by a competent professional authority (such as a physician, nutritionist, nurse, or other designated health official). At a minimum, height (or length) and weight are assessed and, except for infants less than 6 months of age, a hematological test (most often hemoglobin) is administered to assess nutritional status. Program regulations allow State and local agencies to develop their own criteria for nutritional assessments and risk factors, within general Federally defined parameters.

WIC is not an entitlement program. Individuals who meet eligibility criteria may be served only as funds permit. Local agencies are assigned caseloads by State agencies and a priority system is used in making enrollment decisions when an agency is at caseload limit. The priority system ensures that individuals determined to be at the greatest nutritional risk are enrolled first when caseload slots are limited.

Program Benefits

The WIC Program provides supplemental foods, referrals to health and social services, and nutrition education to participants.

Supplemental Foods

The supplemental foods provided by the WIC Program are good sources of nutrients most likely to be lacking in the diets of low-income populations: protein, iron, calcium, and vitamins A and C. Foods available in WIC food packages include iron-fortified infant formula, iron-fortified infant

¹ This dollar value applies to the 48 contiguous States, Washington D.C., Guam, and the U.S. territories. Income thresholds are higher for Alaska and Hawaii.

cereal, infant juices high in vitamin C, milk, eggs, cheese, dried beans and peas, peanut butter, 100% fruit or vegetable juices, breakfast cereals that are high in iron and low in sugar, and, for certain breastfeeding women, carrots and canned tuna.

The type and quantity of foods provided varies according to participants' eligibility category, nutritional needs, and, to the extent possible, personal preferences. Most States operate retail food delivery systems where WIC participants receive food instruments (vouchers) to use in purchasing supplemental foods at local grocery stores. A small number of States operate direct delivery systems, where foods are delivered to participants' homes, or participants pick up foods at warehouses, in combination with or instead of a retail system.

Referrals to Health Care and Social Services

Local WIC agencies are expected to promote routine use of preventive health care services. They are also encouraged to provide referrals, as needed, to appropriate social services and programs (e.g., the Food Stamp Program, Medicaid, AFDC², immunization programs, and other programs relevant to participants' needs).

Nutrition Education

Nutrition education is seen as an essential part of the WIC Program — it provides a mechanism for ensuring that WIC participants achieve desired levels of knowledge and adopt desired attitudes and behaviors. Program regulations define two broad goals for WIC nutrition education:

- to stress the relationship between proper nutrition and good health, with special emphasis on the nutritional needs of the program's target populations; and
- to assist individuals at nutritional risk in achieving a positive change in food habits, resulting in improved nutritional status and the prevention of nutrition-related problems.

In practice, WIC nutrition education encompasses many other issues such as breastfeeding promotion and the use of cigarettes, alcohol, illicit drugs, and over-the-counter medications. Participants may be referred to smoking cessation programs or alcohol and drug treatment programs.

State agencies are required to earmark at least one-sixth of annual administrative funds for nutrition education. Local WIC agencies are required to offer all adult participants and caretakers of infant and child participants at least two nutrition education contacts during each certification period. With the exception of infants (who may be certified for one year) and prenatal women (who are certified for the duration of their pregnancy and up to six weeks postpartum), certification periods last six months. For participants with certifications that extend beyond six months, nutrition education must be provided on a quarterly basis.

² Since the time study data were collected, the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (P.L. 104-193), replaced AFDC (Aid to Families with Dependent Children) with the Temporary Assistance to Needy Families (TANF) block grant to States. The term AFDC is used throughout this report, however, because that was the name of the program at the time study data were collected.

Although all local agencies must provide nutrition education, participants are free to decline these services without affecting receipt of other program benefits. To maximize participation, local agencies tend to schedule nutrition education activities to coincide with issuance of WIC vouchers.

State and local WIC agencies have broad autonomy to develop plans and procedures for providing nutrition education to WIC participants. Consequently, WIC nutrition education is quite diverse. A variety of different methods may be used to provide nutrition education. For example, participants may be counseled one-on-one, may attend classes, or may view videos, filmstrips, or slide presentations on a variety of health- and nutrition-related topics. Providers are encouraged to ensure that nutrition education messages take into account participants' educational levels, nutritional needs, household situations, and cultural preferences. The 1988 Study of WIC Participant and Program Characteristics (PC88) found that the majority of local agencies offered the two required contacts (Williams, R.L., et al., 1990). Some agencies offered more sessions to high-risk participants. Most nutrition education was provided by nutritionists in one-on-one contacts.

Anecdotal evidence indicates that this pattern may have changed in recent years due to increased caseloads. The advent of formula rebates and increases in WIC funding have substantially increased the number of WIC participants. Nationwide, the number of WIC participants increased 45 percent between 1988 and 1994. To accommodate the increased number of participants, many local WIC agencies have modified the systems used to deliver nutrition education. Some local agencies have increased the use of paraprofessionals rather than nutritionists. Other local agencies have replaced individual nutrition education contacts with less labor-intensive contacts such as classes, group or individual viewing of videos or slide presentations, interactive computer programs, and newsletters.

Overview of the Study

The WIC Nutrition Education Assessment Study had four key research objectives:

- To assess pregnant women's nutrition-related knowledge, attitudes, and self-reported behaviors at the time of WIC enrollment.
- To describe the processes used by local agencies in delivering WIC nutrition education to pregnant and postpartum women and the type and amount of nutrition education actually received by these participants.
- To assess participants' satisfaction with WIC nutrition education services, materials, and staff.
- To the extent possible, to assess the impact of WIC nutrition education on participants' knowledge, attitudes, and behaviors.

The impact study encompassed in the study's fourth objective was exploratory in nature. Because program policies precluded establishment of a true control group, i.e., a group of WIC participants to whom WIC nutrition education services were not offered, a quasi-experimental design was used.

Originally, the study design called for a comparison of sites providing higher- and lower-intensity nutrition education. If WIC nutrition education was effective, it was hypothesized, then participants

in higher-intensity sites would show greater improvements than participants in lower-intensity sites (e.g., larger gains in nutrition knowledge or an increased prevalence of recommended behaviors). This design was ultimately abandoned, however, because anticipated differences between sites in the intensity of nutrition education did not hold up in actual practice. Consequently, impact analyses presented in this report are limited to a description of change over time in each of the six study sites. This design does not permit a definitive assessment of the impact of WIC nutrition education. Without a control or comparison group, changes observed over time, whether positive or negative, cannot be attributed to WIC nutrition education. It is possible, for example, that a significant increase in participant knowledge may be due to information participants obtained from sources other than WIC.

While study results that are not generalizable to the WIC population nationwide, they do provide useful insights about the potential magnitude and direction of changes in participants' knowledge, attitudes, and behaviors over time. Moreover, because demographic characteristics of the study sample were quite similar to those of pregnant WIC participants nationwide, as discussed later in this chapter, findings have broad relevance for the WIC Program.

Selection of Study Sites

Site selection was structured to include three sets of site pairs reflecting varying approaches to the delivery of WIC nutrition education. To control for State-level variation in nutrition education policies, study sites were concentrated in three States (one pair of sites per State). The three States selected for the study, one in the Southeast region, one in the Mountain Plains region, and one in the Midwest, used standardized food packages for pregnant women and had a number of local WIC agencies with enrollments large enough to support the sample size requirements of the study.

Within each of the three selected States, numerous factors were considered in selecting two local agencies to participate in the study. Prime among these was the local agency's ability to satisfy sample size requirements. To be included in the study, a local agency had to be large enough to ensure that a minimum of 300-450 newly enrolling pregnant women could be recruited into the study over a period of approximately seven months. While FNS' original criteria called for the higher end of this range, study requirements were adjusted to allow for somewhat smaller samples in two study sites. This accommodation was made to ensure that the study would not be limited to urban local agencies with very large caseloads.

In addition to monthly enrollment of pregnant women, characteristics of the local nutrition education program figured prominently in decisions about site selection. Directors of local agencies that met sample size requirements were interviewed to gather information on policies and procedures used in delivering nutrition education to pregnant and postpartum women. This information was used to create a profile of the nutrition education program in each local agency and to classify agencies as either lower-intensity or higher-intensity.³

³ Higher-intensity sites generally met one or more of the following criteria: provided opportunities for more than the two nutrition education contacts mandated by current regulations; offered more individual (as opposed to group) contacts; and/or reported longer average contact time (minutes), particularly for follow-up contacts. Most sites designated as higher-intensity also reported a more comprehensive breastfeeding promotion program.

Once designations of lower- and higher-intensity were assigned to each candidate local WIC agency within a State, two local agencies in each State, one higher-intensity and one lower-intensity, were selected to participate in the study. Site selection was structured to ensure ethnic and cultural diversity across the sample, as well as variability in community type.

Characteristics of the six study sites are summarized below:

Southeast Region

- Site 1 Large county health department in an urban area. Participant population is comprised largely of Hispanics and Blacks, many of whom are recent immigrants.
- Site 2 Large county health department in a primarily suburban area. Participant population includes roughly equivalent proportions of Blacks and Whites.

Mountain Plains Region

- Site 1 Large multi-county health department in an urban area. More than half of the participants are White; roughly equivalent proportions of the remainder are Black and Hispanic.
- Site 2 Small city health department in a rural area. More than half of the participants are Hispanic; most of the others are White.

Midwest Region

- Site 1 Large community health center in an urban area. About two-thirds of the participants are White.
- Site 2 Small county health department in a rural area. About 80 percent of participants are White.

Sample Recruitment

Newly enrolling pregnant women were recruited into the study just prior to WIC certification. A newly enrolling pregnant woman, while just being certified for her current pregnancy, may have participated in WIC during previous pregnancies and/or as caretaker of an infant or child WIC participant. To ensure that baseline information was collected before women received any nutrition education for their current pregnancy, most sample members were recruited and interviewed in WIC delivery sites on the day they came in for certification appointments. Interviews were completed *before* women met with any WIC staff.

In two sites (Southeast Site 2 and Mountain Plains Site 1), the use of large group certification appointments made it difficult for study staff to recruit and interview all potential respondents before

they met with WIC staff. Consequently, the recruitment strategy was changed so that women were interviewed in their homes two to three days prior to their certification appointments.

Sample recruitment began in August 1994 and continued through July 1995. The final baseline sample included 2,100 newly certified pregnant WIC participants. Sample distribution across the six study sites is shown below:

Southeast Region	Site 1	400
	Site 2	400
Mountain Plains Region	Site 1	400
	Site 2	300
Midwest Region	Site 1	300
	Site 2	300

The smaller samples for Mountain Plains Site 2 and Midwest Site 2 reflect the fact that these are small, rural sites. The target sample size for Midwest Site 1 was reduced from 400 to 300 because the rate of new enrollments was substantially lower than expected, based on information provided by the local agency director, and the rate of failed certification appointments (no shows) was much higher than anticipated.

Data Collection Components and Schedule

As noted above, baseline interviews were conducted just before women were certified as prenatal WIC participants. The study also included two follow-up interviews, abstraction of data from WIC records, and, to obtain additional information about the delivery of nutrition education services in each site, interviews with local agency directors and on-site observations of nutrition education sessions. Each of these study components is described in detail below. Data collection components and schedule are summarized in Exhibit 1.1.

Follow-up Interviews

Sample members were re-interviewed at two points in time. The first follow-up interview, referred to as the *prenatal survey*, was completed when women were at approximately 32-36 weeks gestation. The second follow-up interview, referred to as the *postpartum survey*, took place approximately 16-24 weeks postpartum, when infants born to study participants were between 4 and 6 months of age. Follow-up interviews were completed by telephone unless the respondent did not have a phone. Respondents who did not have phones were interviewed in person.

Both the prenatal and postpartum surveys included measures of knowledge, attitudes, and behavior identical to those included in the baseline survey. (Measures are discussed in more detail in a subsequent section of this chapter). In addition, both surveys included questions about the number and type of nutrition education contacts received; the types of information and advice provided by WIC staff; and satisfaction with WIC nutrition education staff and services. The postpartum survey also included items about infant feeding decisions made at birth and infant feeding practices between birth and 4 - 6 months of age. A sample prenatal survey is provided in Appendix A.

Exhibit 1.1

Data Collection Components, Timing, and Schedule

Component	Timing	Schedule
Recruitment and baseline interviews	Prior to WIC certification	Aug. 1994 - July 1995
Prenatal surveys	Approximately 32-36 weeks gestation	Sept. 1994 - Feb. 1996
Postpartum surveys	Approximately 4-6 months postpartum	Mar. 1995 - July 1996
WIC record abstractions	After postpartum survey	June - Sept. 1996
Interviews with local agency directors	During prenatal survey data collection period	Spring 1995
Observations of nutrition education sessions	During prenatal survey data collection period	June - Aug. 1995

WIC Record Abstractions

Information about nutrition education contacts received by study subjects was abstracted from WIC records. Trained field staff used a standardized form to collect information on the date of WIC certification (prenatal and postpartum); the date of each nutrition education contact; the type of contact (individual or class/group); the name and, if available, title and/or credentials of the person providing the nutrition education; topics covered; and referrals made to health care and social service agencies or programs. Record keeping policies varied across sites, so not all information could be documented in each site. Abstractions in each site were completed shortly after the final postpartum surveys were completed. A sample record abstract form is provided in Appendix B.

Staff Interviews and Observations of Nutrition Education Contacts

Staff interviews and on-site observations of nutrition education contacts were used to augment information on nutrition education practices obtained during site recruitment. Interviews were completed in Spring 1995 and observations, approximately 30 in each site, were conducted between June and August, 1995. Sample observation forms are provided in Appendix C.

Study Instruments

In developing study instruments, a concerted effort was made to ensure that theories of health behavior were considered and that, to the extent possible, existing measures, i.e., instruments used successfully in previous research, were used or adapted.

A comprehensive review of the literature was conducted to identify studies, published in English between 1987 and Spring 1993, that focused on pregnant and/or postpartum women and their nutrition knowledge, attitudes, and/or behaviors (e.g., dietary intake, use of prenatal iron and multi-vitamin supplements, and infant feeding practices). In selecting papers or reports for review, an emphasis was given to studies with experimental and quasi-experimental designs, however, non-experimental research was also included if the instrumentation was potentially useful.

Measures of Nutrition Knowledge

A total of seven different knowledge instruments were identified through the literature search. Although all instruments reportedly had good reliability, none was suitable for use in the WIC Nutrition Education Assessment Study because they were too long; focused on only one aspect of nutrition knowledge, e.g., breastfeeding; or were designed to measure only the specific information imparted in the nutrition education intervention under study.

All available instruments were reviewed by FNS staff who then prepared a series of 21 items designed to measure concepts or facts thought to be central to most WIC nutrition education efforts. This battery of nutrition knowledge items includes some that were taken verbatim from existing instruments, some that were adapted from existing items, and others that were developed by FNS staff. Four content areas are covered: general nutrition knowledge (food sources of nutrients and recommended eating patterns); healthy practices during pregnancy (diet, weight loss, and use of alcohol, cigarettes, and over-the-counter medications); breastfeeding; and recommended infant feeding practices.

Measures of Attitudes and Perceptions

Thirteen of the instruments identified through the literature search measured attitudes toward healthy eating during pregnancy, attitudes toward breastfeeding, and/or related constructs. These instruments were used to develop several different sets of survey questions.

A battery of items used by Rosander and Sims (1981) was adopted, with minor modifications, to assess attitudes about the effect of diet on health and general attitudes about control over eating habits. In addition, a series of items was specifically included to measure women's attitudes toward breastfeeding and bottle feeding. The items were adapted from those used in three papers premised on the *theory of reasoned action* (Gielen, A.C., et al., 1992; Manstead, A.S., et al., 1983; and Matheny, R.J., 1987). The *theory of reasoned action* (Fishbein, M. and Ajzen, I., 1975) assumes that individuals consider the implications of their actions before they decide to engage in a given behavior. The key construct is *behavioral intention*, which is measured by assessing, in this study, a woman's beliefs about the advantages and disadvantages of breastfeeding (behavioral beliefs) and the relative value she placed on each belief (evaluation factors).

The study instrument also included items designed to measure participants' *self-efficacy*. Self-efficacy is a key construct in the *social learning theory* of health behavior, which holds that behavior

change is influenced by an individual's observation of other people in their environment (Bandura, A., 1977). Measures of self-efficacy reflect the relative level of confidence an individual has in his or her ability to implement a particular behavior. Self-efficacy can be influenced by an individual's beliefs about the anticipated approval or support of significant others (e.g., husband, mother, other family members).

A published but untested set of items designed to measure self-efficacy with regard to healthy eating practices was adapted for use in this study (IOX Assessment Associates, 1988). A separate survey item was developed to provide a limited assessment of perceived social support, i.e., participants' perceptions about whether anyone in their life might make it difficult for them to implement desired behaviors. The need to limit the length of the survey, in order to promote adequate response rates, precluded use of a separate measure of self-efficacy related to breastfeeding or a more elaborate measure of social support.

Measures of Dietary Intake

Because participants' dietary intake is likely to be directly affected by the food package, and all participants received food packages, the study's ability to examine the independent influence of nutrition education on dietary intake was limited. Consequently, the measure of dietary intake selected for the study provided general information about usual patterns of food consumption rather than detailed estimates of nutrient intake.

A variety of different food frequency and checklist instruments were examined, with an emphasis on those that were brief, simple to administer, and designed for use with pregnant and/or postpartum women. None of the instruments used in published research fit the needs of the study exactly, and most were too lengthy for inclusion in the multifaceted survey instrument. Ultimately, an abbreviated food frequency was developed, based on an instrument used by Rosander and Sims (1981). The food frequency measured usual consumption of WIC foods as well as a number of specific non-WIC foods (meats, poultry and fish; fried foods; fruits and vegetables other than those provided by WIC; sweetened beverages; sweets; and alcoholic beverages).

Use of Cigarettes and Alcohol

Measures of cigarette and alcohol use were included, along with an item that assessed the prevalence of use of over-the-counter medications without physician approval, because these topics are frequently covered in WIC nutrition education contacts. Survey items used in the National Maternal and Infant Health Survey (NMIHS) were adopted, with minor modifications, to assess these behaviors. To reduce the likelihood of respondents giving socially desirable answers, questions about use of cigarettes and alcohol were imbedded in a series of questions that covered a broad range of topics.

The Study Sample

As noted above, the baseline sample comprised 300-400 pregnant women in each of the six study sites. Exhibit 1.2 shows sample sizes and response rates for each of the other data collection components. The overall response rate for the prenatal survey ranged from 72 to 82 percent. The primary reasons for non-response were early delivery and terminated pregnancies (miscarriages and

Exhibit 1.2

Sample Sizes and Response Rates by Data Collection Component

Study Components	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Baseline Sample	400	400	400	300	300	300
Prenatal Survey						
Number completed	324	329	333	237	216	233
Overall response rate	81%	82%	83%	79%	72%	78%
Response rate among eligible respondents ¹	93%	98%	92%	92%	89%	93%
Postpartum Survey						
Number completed	301	344	310	218	216	239
Overall response rate	75%	86%	78%	73%	72%	80%
Response rate among eligible respondents ²	79%	91%	82%	79%	77%	88%
WIC Record Abstraction						
Number completed	377	397	380	277	292	286
Overall response rate	94%	99%	95%	92%	97%	95%

¹Excludes respondents who gave birth, had miscarriages, or terminated their pregnancies before the prenatal survey. Also excludes one respondent who died.

²Excludes respondents who had miscarriages or terminated their pregnancies. Also excludes two respondents who died.

abortions).⁴ In both cases, respondents were no longer pregnant at the time the prenatal survey was attempted and were considered ineligible for the interview. Among eligible respondents, the response rate for the prenatal survey ranged from 89 to 98 percent. Reasons for non-response to the prenatal survey are summarized in Exhibit D.1 (Appendix D).

The overall response rate for the postpartum survey ranged from 72 to 86 percent. Among eligible respondents, i.e., those who had live births and maintained custody of the infant, the response rate was 77 to 91 percent. Reasons for non-response are summarized in Exhibit D.2.

The response rate for the WIC record abstracts was quite high, ranging from 92 to 99 percent.

Sample Characteristics

Demographic characteristics of the baseline sample were fairly consistent across study sites (Exhibits 1.3 and 1.4) and, for the total sample, were similar to those reported for pregnant WIC participants nationwide (Exhibit 1.5). The fact that the study sample resembled WIC participants nationwide suggests that study findings, although not generalizable to all WIC participants, do have broad relevance to the WIC population as a whole.

All analytic subsamples were comparable to the full baseline sample. Mean baseline demographic and prenatal history variables for analytic subsamples virtually never differed from the full baseline sample by more than one percentage point (Exhibit D.3).⁵ The comparability of the full baseline sample and the final analysis samples demonstrates that non-response and sample attrition did not bias the study sample.

Organization of This Report

This report includes five additional chapters. Chapter 2 presents information on the processes used by participating local agencies in delivering nutrition education to prenatal and postpartum WIC participants.

Chapter 3 describes the nutrition education received by study participants and the types of information and advice provided by WIC staff. Chapter 3 also presents results of an exploratory analysis that examined the relationship between participant characteristics and receipt of a second nutrition education contact.

Chapter 4 describes changes in participants' nutrition-related knowledge, attitudes, and behaviors between WIC certification and the two follow-up surveys.

4 In the two Mountain Plains sites, as well as in Midwest Site 1, some of the respondents classified as terminated pregnancies may actually not have been pregnant at the time of WIC certification and enrollment into the study. The Mountain Plains sites do not require proof of pregnancy and Midwest Site 1 allows women to participate for up to 90 days without proof of pregnancy.

5 The sole exception was the "other non-White race" indicator. This variable flagged clients whose race was other than Black, Hispanic, or White, or whose race was unknown because the WIC record was missing this information. When the sample is restricted to cases for which the record abstraction was carried out, this miscellaneous category dwindles from six percent to three percent.

Exhibit 1.3

Demographic Characteristics of Baseline Sample

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 1	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
Age							
Less than 15 years	0.0%	1.0%	1.0%	1.3%	0.3%	1.0%	0.8%
15-17 years	6.3	8.8	13.0	13.7	11.0	14.0	10.9
18-34 years	83.3	85.3	83.0	76.7	82.0	78.7	81.8
35 or more years	10.0	4.5	2.3	6.7	4.7	3.7	5.3
Not reported	0.5	0.5	0.8	1.7	2.0	2.7	1.2
Mean (years)	26.4	23.9	22.5	23.5	23.0	22.7	23.8
Race							
Black (non-Hispanic)	13.8%	41.3%	18.0%	1.3%	15.3%	14.7%	18.4%
Hispanic	73.0	1.3	20.3	53.3	13.3	0.0	27.5
White (non-Hispanic)	1.3	53.3	53.5	37.0	67.7	80.0	47.0
Other/not reported	12.0	4.3	8.3	8.3	3.7	5.3	7.1
Marital status							
Single, never married	56.0%	48.5%	50.8%	49.3%	57.3%	56.0%	52.8%
Married/living w/partner	32.8	37.3	37.8	39.0	30.7	32.3	35.1
Divorced	3.8	6.5	5.8	6.0	10.0	8.3	6.5
Legally separated	7.5	7.3	5.8	5.0	2.0	2.3	5.2
Widowed	0.0	0.5	0.0	0.7	0.0	1.0	0.3
Employment status							
Currently employed	21.8%	31.0%	31.3%	34.3%	27.3%	35.0%	29.8%
Not employed	78.3	69.0	68.8	65.7	72.7	65.0	70.2

Exhibit 1.3
(continued)

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 1	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
<i>Hours worked per week</i>							
Not working	78.3%	69.0%	68.8%	65.7%	72.7%	65.0%	70.2%
< 20 hours	3.3	3.3	4.8	6.0	6.0	5.7	4.7
20-39 hours	9.0	16.1	17.3	16.6	14.0	19.3	15.2
40 or more hours	9.5	11.8	8.8	11.7	7.3	10.0	9.9
Mean (hours/week) ¹	30.7	30.6	29.8	28.7	27.7	30.7	29.8
<i>Education</i>							
Less than 8th grade	9.5%	0.8%	3.3%	2.3%	1.3%	2.3%	3.4%
Completed 8th grade	4.3	2.0	2.5	4.3	3.7	3.7	3.3
Some high school	34.8	24.8	36.8	28.0	32.3	34.0	31.8
Completed HS/GED	32.8	38.8	21.8	25.3	34.7	30.7	30.7
Some college or post-HS	9.3	24.5	18.5	27.7	21.7	19.7	19.8
Associate, vocational or technical degree	7.5	7.5	16.8	11.7	5.0	8.3	9.6
Bachelor's degree or higher	2.0	1.8	0.5	0.7	1.3	1.3	1.3
<i>Current schooling</i>							
In school	12.3%	23.3%	19.8%	19.7%	23.3%	22.3%	19.9%
Not in school	87.8	76.8	80.3	80.3	76.7	77.7	80.1

¹Means based on sample members reporting employment.

Exhibit 1.4

Household Characteristics of Baseline Sample

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	Sites
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
<i>Number of children in household</i>							
None	30.8%	35.8%	40.0%	34.0%	33.0%	39.0%	35.4%
1 child	35.8	32.5	29.3	33.0	33.7	34.0	33.0
2-3 children	27.3	25.5	27.5	27.7	29.0	23.0	26.7
4 or more children	6.3	6.3	3.3	5.3	4.3	4.0	5.0
Mean (children)	1.2	1.2	1.1	1.2	1.2	1.0	1.2
<i>Number of other adults in household</i>							
None	10.8%	19.0%	15.0%	16.0%	20.0%	17.7%	16.2%
1 other adult	42.5	58.0	45.5	57.0	53.0	53.7	51.2
2-3 other adults	41.0	21.8	34.0	25.3	24.3	26.0	29.2
4 or more other adults	5.8	1.3	5.5	1.7	2.7	2.7	3.4
Mean (other adults)	1.6	1.8	1.5	1.2	1.5	1.2	1.5
<i>Total household size</i>							
1 person	2.3%	5.5%	5.0%	4.7%	7.0%	7.3%	5.1%
2 persons	16.3	28.0	27.3	26.7	22.7	25.3	24.3
3 persons	27.3	29.8	24.8	27.7	30.3	33.3	28.6
4 persons	26.8	19.0	20.3	20.7	21.3	18.3	21.2
5 persons	14.0	8.5	9.8	7.3	9.0	8.0	9.6
6 or more persons	13.5	9.3	13.0	13.0	9.7	7.7	11.1
Mean (persons)	3.9	3.3	3.5	3.4	3.4	3.2	3.5
<i>Household receipt of AFDC and Food Stamp benefits</i>							
AFDC and Food Stamps	15.5%	23.0%	12.5%	22.3%	30.3%	19.3%	20.0%
AFDC only	2.0	4.5	2.5	2.0	4.3	8.7	3.9
Food Stamps only	14.3	21.3	13.0	16.3	15.7	17.0	16.2
Neither AFDC nor Food Stamps	67.8	51.0	70.8	59.0	49.3	54.3	59.3
Not reported	0.5	0.3	1.3	0.3	0.3	0.7	0.6

Exhibit 1.4
(continued)

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
<i>Household income (\$ per month)</i>							
Less than \$250	19.8%	8.8%	7.3%	9.0%	9.7%	5.3%	10.2%
\$251 - \$500	25.0	15.8	14.3	24.3	19.0	14.3	18.7
\$501 - \$750	20.8	15.0	10.5	16.0	15.3	18.3	15.9
\$751 - \$1,000	20.0	19.0	14.5	23.0	17.0	13.3	17.8
\$1,001 - \$1,250	7.8	10.8	8.8	10.7	8.7	8.3	9.1
\$1,251 - \$1,600	3.5	12.3	12.0	7.7	6.3	10.7	8.8
\$1,601 - \$2,500	1.0	7.0	8.3	7.7	10.3	8.7	6.9
More than \$2,500	0.3	1.8	5.0	1.0	2.0	3.3	2.2
Not reported	2.0	9.8	19.5	0.7	11.7	17.7	10.2
<i>Distribution of percent of poverty level¹</i>							
0 - 50	57.0%	29.0%	23.5%	39.7%	33.3%	23.0%	34.6%
51 - 100	31.5	27.0	23.3	32.3	27.3	25.0	27.7
101 - 130	6.0	13.3	11.0	13.0	10.7	12.7	11.0
131 - 150	1.3	10.0	8.0	6.3	7.0	10.0	7.0
151 - 185	1.3	5.8	6.8	4.7	4.7	4.3	4.6
More than 185	0.8	5.3	7.5	3.3	5.3	7.3	4.9
Not reported	2.3	9.8	20.0	0.7	11.7	17.7	10.4

¹Poverty level calculations are based on income, income period, and household size.

Exhibit 1.5**Characteristics of Baseline Sample Members In Comparison to Data from 1994 Census of WIC Participants**

	Baseline Sample	Pregnant WIC Participants in 1994¹
	(n=2100)	(n=823, 604)
Age		
Less than 15 years	0.8%	1.0%
15-17 years	10.9	11.2
18-34 years	81.8	81.7
35 or more years	5.3	5.0
Not reported	1.2	1.0
Race		
American Indian or Alaskan Native	0.0%	1.5%
Asian or Pacific Islander	1.0	2.6
Black (non-Hispanic)	18.4	23.9
Hispanic	27.5	27.7
White (non-Hispanic)	47.0	43.8
Other/not reported	6.2	0.6
Household receipt of AFDC and Food Stamp benefits		
AFDC and Food Stamps	20.0%	24.1%
AFDC only	3.9	3.0
Food Stamps only	16.2	12.7
Neither AFDC nor Food Stamps	59.3	52.3
Not reported	0.6	7.8

Exhibit 1.5
(continued)

	Baseline Sample	Pregnant WIC Participants in 1994¹
	(n=2100)	(n=823, 604)
<i>Total household size</i>		
1 person	5.1%	17.8%
2 persons	24.3	26.5
3 persons	28.6	25.0
4 persons	21.2	15.1
5 persons	9.6	7.7
6 or more persons	11.1	6.9
Not reported	0.0	0.7
Mean (persons)	3.5	3.0
<i>Distribution of percent of poverty level</i>		
0 - 50	34.6%	31.2%
51 - 100	27.7	27.8
101 - 130	11.0	11.0
131 - 150	7.0	5.5
151 - 185	4.6	5.8
More than 185	4.9	1.0
Not reported	10.4	17.7
<i>Annualized household income</i>		
Mean	\$10,523	\$9,017
Median	\$9,317	\$7,800
Not reported	10.4%	17.7%
<i>Trimester at time of WIC enrollment</i>		
First trimester	42.1%	38.9%
Second trimester	46.4	40.1
Third trimester	11.4	10.7
Not reported	0.1	10.3

¹Source: Randall, B., L. Boast, and L. Holst (1995), *Study of WIC Participant and Program Characteristics: 1994*. Report prepared by Abt Associates Inc. for the U.S. Department of Agriculture, Food and Nutrition Service.

Participant satisfaction is the focus of Chapter 5. This chapter presents participant responses to a variety of survey items that assessed satisfaction with the WIC Program in general and with the nutrition education component of the program in particular. The development of a composite measure of satisfaction is described, as are results of analyses that examined relationships between participants' nutrition education experiences and their overall level of satisfaction.

Finally, Chapter 6 summarizes results of analyses that examined the influence of attitudinal and social factors on selected behaviors. Emphasis is given to the influence of beliefs and values related to breastfeeding on the intention to breastfeed and the actual initiation and duration of breastfeeding. More limited assessments of the influence of perceived self-efficacy on selected eating behaviors and the influence of negative social support on cigarette and alcohol use are also included.

Chapter 2

Characteristics of WIC Nutrition Education Offered in Study Sites

This chapter describes the nutrition education offered to pregnant and postpartum women in the six local agencies that participated in the WIC Nutrition Education Assessment Study. The information presented was obtained primarily through direct observation of a sample of nutrition education contacts in each local agency. Some information was provided by local agency directors in interviews conducted during the site selection process and the first year of the project.

The chapter begins with a description of the methodology used in conducting observations of WIC nutrition education contacts and then turns to a discussion of how the nutrition education component of the WIC Program was implemented in each of the six study sites at the time study data were collected. The discussion focuses on five aspects of the nutrition education offered to prenatal and postpartum women in each local agency:

- **General characteristics:** the type(s) of contacts offered (e.g., individual contacts, classes, videos); average duration; policies for high- and low-risk participants; schedule for voucher pick-up; staff used to provide nutrition education; features of breastfeeding promotion programs; and problems with participant no-shows.
- **Quality of staff/participant interactions:** the extent to which WIC staff exhibited positive behaviors during general nutrition education contacts and in breastfeeding promotion efforts.
- **Quality of the environment:** the extent to which the environment in which WIC nutrition education was delivered was conducive to participant comfort and participation.
- **Content:** topics covered during observed nutrition education contacts.
- **Referrals:** referrals to health and social services provided by WIC staff during observed nutrition education contacts.

Nutrition Education Observations

As described in Chapter 1, detailed information about procedures used in providing nutrition education was obtained during the site selection process. This information was augmented by on-site observations of actual nutrition education contacts in each site. The on-site observations provided a real-world "snapshot" of the nutrition education offered to pregnant and postpartum women in each site. In combination with the information obtained from local agency directors, these observations provide a context for interpreting other study data.

Observers recorded the start and end time of each contact; the topics covered (either discussed by a WIC staff member or included in videos or written materials); and any referrals made. In addition, in order to assess the relative *quality* of nutrition education contacts, observers evaluated staff/participant interactions as well as the environment in which nutrition education contacts were conducted. Measures of staff/participant interaction and environmental quality were identified jointly by FNS, Abt, and members of the project's technical advisory group. Wherever possible, items were adapted from instruments used in previous studies. Items were worded to minimize the chance of subjective variation among observers.

Four different observation forms were developed. Observers selected the appropriate form based on the type of contact being observed (individual or group) and the type of participant(s) (prenatal or postpartum/breastfeeding) involved. Copies of all observation forms are provided in Appendix C.

Observations were conducted by nutritionists familiar with the WIC Program. All observers completed a one-day training session which included detailed review of specific rating criteria for each quality measure and coding of videotaped nutrition education contacts from WIC sites not participating in the study. Standardization was achieved by having observers code two videotapes of actual WIC nutrition education sessions.

One observer was assigned to each site for a period of four to six weeks. In each site, the goal was to observe 30 nutrition education contacts provided to pregnant and postpartum women. Observations were to be spread across prenatal certifications (n=8), prenatal follow-up or secondary contacts (n=7), postpartum certifications (n=8), and postpartum follow-ups (n=7). Observers developed weekly observation schedules based on scheduled appointments and classes and worked until the various quota were satisfied. In some cases, problems with participant no-shows resulted in fewer observations (in total, or of a particular type) than planned.

General Characteristics of Nutrition Education Contacts

Every WIC site has defined procedures for delivering nutrition education to participants through two basic types of contacts—certification contacts and follow-up contacts. For pregnant participants, the certification contact is the point of entry into the program. For postpartum participants, most of whom have participated in WIC during pregnancy, the certification contact initiates a new phase of participation in the program and reclassifies the participant as either a postpartum participant or a breastfeeding participant. In this chapter, and for the remainder of the report, the term postpartum (participant) is used to refer to both postpartum and breastfeeding participants.

Follow-up contacts generally coincide with participants' visits to the WIC clinic to pick up vouchers. Women with specific high-risk characteristics may be asked to come in for nutrition education on a more frequent basis.

Prenatal Certification Contacts

Study sites used a variety of methods to complete prenatal certification contacts (Exhibit 2.1). Certification contacts in two sites (Southeast Site 1 and Midwest Site 1) included both group and individual interactions. Women first viewed one or more videos in a group setting, without WIC staff,

Exhibit 2.1

Characteristics of Prenatal Nutrition Education Contacts in Study Sites

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Certification						
Type of contact	Video and individual	Video(s) and class	Video and class	Individual	Video and individual	Individual
Length of contact <i>Mean/Range (min.)</i>	48 (30-75)	70 (55-93)	84 (70-120)	66 (55-78)	30 (15-95)	29 (12-32)
Prenatal Follow-up						
Voucher issuance	Bimonthly	Bimonthly	Trimonthly	Trimonthly	Bimonthly	Bimonthly
Low-risk Participants						
Type of contact	Newsletter	Class	Individual	Individual	Class	Class
Length of contact <i>Mean/Range (min.)</i>	N/A	20 (20-22)	21 (15-25) ¹	21 (16-32) ¹	75 ²	65 (50-80) ³
High-risk participants						
Type of contact	Individual	Individual, class, or both	Individual	Individual	Individual	Individual
Length of contact <i>Mean/Range (min.)</i>	30 (25-45)	36 (15-65)	21 (15-25) ¹	21 (16-32) ¹	40 ²	15 ²
No. of Contacts Observed						
Certification	8	8	8	8	8	12
Follow-up	5 ⁴	4 classes/3 individual	7	7	1 class/1 individual	2 classes/1 individual

Notes: Participants in Southeast Site 2 may also attend brief nutrition education classes offered in the waiting room (see text). These contacts are not counted toward the two required contacts and are not documented in the WIC record.

¹Mean and range for all observed individual contacts, both low- and high-risk.

²Only one contact observed.

³Only two contacts observed.

⁴Includes only individual follow-up contacts. Distribution of newsletters was not "observed."

Source: On-site observations.

and then went on to an individual counseling session. In the observed contacts, videos ran for approximately 15 minutes.

Certifications in two other sites (Southeast Site 2 and Mountain Plains Site 1) used group contacts exclusively. In these sites, women watched one or more videos as a group (average of 15 to 40 minutes in observed contacts) and then attended a class. The videos were usually (but not always) discussed during the class.

The remaining two sites (Mountain Plains Site 2 and Midwest Site 2) used individual counseling for all certification contacts. Women in these sites did not view videos during the certification process.

Follow-up Prenatal Contacts

As noted above, follow-up nutrition education contacts were generally planned to coincide with voucher pick-ups. Voucher pick-up occurred every two months in the Southeast and Midwest sites and every three months in the Mountain Plains sites (Exhibit 2.1). In all sites, women with specific high-risk characteristics or conditions might be asked to come in more frequently for monitoring or for additional nutrition education/counseling. This was especially true in the Mountain Plains sites because of the tri-monthly voucher issuance schedule.

With the exception of the two Mountain Plains sites, which used individual counseling for all follow-up contacts, local agencies had different policies for follow-up nutrition education for participants classified as high-risk and for other (low-risk or non-high-risk) participants. As Exhibit 2.1 illustrates, the most common policy was to provide individual counseling for high-risk participants and to provide classes for other participants.

The policy was somewhat more fluid in Southeast Site 2, where high-risk participants may have received individual counseling, attended a class, or both, depending on the reason for high-risk designation, extent of previous nutrition education, and clinic schedules. In addition, women in this site had the opportunity to receive additional nutrition education through brief (10-15 minute) "topic of the month" classes taught in the waiting room throughout the day. These brief classes were not counted toward the required two nutrition education contacts and were not documented in WIC records.

The policy for follow-up contacts with low-risk women in Southeast Site 1 differed markedly from the other five sites. Here, follow-up contacts were comprised of monthly newsletters that covered different nutrition education topics. Newsletters were distributed by clerks when participants came in to pick up vouchers.

Participant No-shows

Experience during the on-site observation period indicated that participants' receipt of follow-up nutrition education may be affected by no-shows, i.e., failure to show up for or attend a planned nutrition education activity. Problems with no-shows were noted in four of the six study sites. Only the Mountain Plains sites did not seem to suffer from this problem.

In Southeast Site 1, about one-quarter of the participants scheduled for individual follow-up appointments did not keep their appointments. This is consistent with the usual no-show rate

reported by the local agency director. The no-show rate was somewhat higher in Southeast Site 2, where about 45 percent of the women scheduled to attend four observed classes did not show up. This no-show rate was about twice the usual rate reported by the local agency director. Some of the difference between reported and observed no-show rates was attributable to a hurricane that affected the local area for about a week during the six-week observation period.

No-shows were not a problem in either of the Mountain Plains sites. This is consistent with, although somewhat better than, the usual no-show rates reported by local agency directors (4% and 8%, respectively). The low no-show rate in these sites may be influenced by tri-monthly voucher issuance, i.e., participants have to come into WIC less often and may therefore be more cooperative.

During the observation period, there was a severe no-show problem in both Midwest sites. As shown in Exhibit 2.1, despite six weeks on site, observers were only able to observe two follow-up contacts in Site 1 (the goal was 7) and three in Site 2. In both sites, classes scheduled for observation were canceled because no one showed up. In addition, women in both sites were observed openly refusing to attend nutrition education classes.

Directors in both of these local agencies reported long-standing problems with no-shows and attributed the behavior to low levels of interest among participants. In Midwest Site 1, lack of transportation to WIC clinic sites also reportedly impeded some participants' ability to participate in nutrition education activities. Administrative policies related to scheduling and use of proxies for voucher pick-ups may also have contributed to high no-show rates. Neither agency set up specific appointments for individual follow-ups for high-risk women. Rather, the need for a follow-up contact was noted on a card that women were required to show each time they picked up vouchers. As a consequence, women who came to the WIC clinic to pick up vouchers may have been unprepared to spend additional time in a nutrition education contact. In addition, both of the Midwest sites were more liberal about the use of proxies to pick up WIC vouchers than the other four sites, where use of proxies was discouraged and carefully monitored. The frequency of proxy voucher pick-ups was much higher in these sites (see Chapter 3). Obviously, if a woman does not come in to pick up her vouchers, she is not able to participate in nutrition education activities.

Toward the end of the study period, local agency directors in both Midwest sites had become so concerned about the no-show problem that they instituted policies to deal with it. Site 1 instituted a system that required participants to read a handout with a specific nutrition education message and to sign a paper documenting the contact before vouchers were disbursed. Site 2 required women who did not receive a second contact during their prenatal certification period to watch a video before receiving their first set of postpartum vouchers.

Postpartum Certification Contacts

WIC benefits for pregnant participants extend for up to six weeks postpartum. Women are encouraged to apply for benefits as a postpartum or breastfeeding participant during this extension period in order to avoid loss of WIC food package benefits. Infants born to WIC mothers are automatically eligible for WIC but must be certified in order for the mother to begin receiving WIC benefits, which include infant formula for the infant and nutrition education for the mother. Thus, after their baby is born, pregnant WIC participants must be certified for their own continued participation and must also arrange for their infants' certification.

With the exception of the two Southeast sites, certifications for both postpartum women and their infants were accomplished in one individual contact (Exhibit 2.2). In-hospital certifications for both mothers and infants were available for women who gave birth in selected hospitals in Southeast Site 2 and in both Midwest sites. These contacts could not be observed.

In Southeast Site 1, group appointments, the focal point of which was a class on infant feeding, were used to certify infants. At that time, women received a referral and were required to return to the WIC clinic at a later date for a separate individual appointment to complete their own postpartum certification. During the on-site observation period, the no-show rate for these (women-only) postpartum certification appointments was quite high (42% compared to 22% for the infant groups). Anecdotal reports from site staff indicate that some women do not return for these appointments and never certify as postpartum participants. Data from WIC record abstracts (Chapter 3) are consistent with these reports.

Southeast Site 2 used a number of different approaches to certify postpartum women and their infants. An infant feeding class, comparable to the class in Southeast Site 1, was offered and some certifications (infant only or mother and infant, depending on attendance and participant schedules) were completed at the class. Individual appointments which included certification for both mother and infant were also used.

Follow-Up Postpartum Contacts

Policies for follow-up postpartum nutrition education contacts were essentially the same as for follow-up prenatal contacts. During the observation period, no-show rates for postpartum follow-up contacts were quite high in all sites except the two Mountain Plains sites. As shown in Exhibit 2.2, the two Mountain Plains sites were the only sites in which the desired seven postpartum follow-up contacts were observed. The small number of observations in the other four sites was directly attributable to high no-show rates.

It should be noted that postpartum women are also required to attend nutrition education contacts for their infants and any other participating children. Program requirements mandate that every participant (woman, infant, or child) receive a minimum of two nutrition education contacts per certification period. While the study protocol did not include a detailed assessment of the requirement for and receipt of nutrition education contacts not explicitly directed at sample women, it appears that contacts were not double counted, i.e., follow-up contacts were credited either for the postpartum woman or her infant, but not both. This approach is designed to ensure that each participant receives a minimum of two unique nutrition education contacts during the certification period. This is consistent with general practice in many WIC clinics (Peacock, J., 1998).

Nutrition Education Staff

With the exception of Southeast Site 1 and Midwest Site 1, all sites used a combination of staff to provide nutrition education. Nutritionists conducted all nutrition education contacts observed in Southeast Site 1 except follow-ups for low-risk participants, which consisted of a newsletter distributed by voucher clerks. Nurses completed all nutrition education in Midwest Site 1. According to information provided by local agency directors, paraprofessionals were reportedly involved in follow-up postpartum contacts in Southeast Site 1, however, this could not be documented because no postpartum follow-up contacts were available for observation, as discussed in the preceding section.

Exhibit 2.2

Characteristics of Postpartum Nutrition Education Contacts in Study Sites

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Postpartum Certification						
Type of contact	Individual for mother and class for infant (2 appointments)	Individual for mother and infant OR Individual for mother and class for infant (2 appointments) ¹	Individual for mother and infant	Individual for mother and infant	Individual for mother and infant ¹	Individual for mother and infant ¹
Length of contact <i>Mean/Range (min.)</i>	Class: 49 (40-60) Individual: 42 (35-50)	Class: 21 (15-30) ² Individual: 23 (20-30)	46 (25-65)	54 (41-66)	30 (24-38)	26 (8-41)
Postpartum Follow-up						
Low-risk Participants						
Type of Contact	Newsletter	Class	Individual	Individual	Class	Class
Length of contact <i>Mean/Range (min.)</i>	N/A	22 (20-25)	35 (15-50) ³	21 (14-30) ³	N/A ⁴	62 ⁵
High-risk participants						
Type of Contact	Individual	Individual	Individual	Individual	Individual	Individual
Length of contact <i>Mean/Range (min.)</i>	N/A ⁴	20 ⁵	35 (15-50) ³	21 (14-30) ³	18 (14-21) ²	22 (18-26) ²
No. of Contacts Observed						
Certification	4 classes/3 individual	2 classes/5 individual	8	8	6	10
Follow-up	0	1 class/3 individual	7	7	2 individual	1 class/2 individual

Note: Participants in Southeast Site 2 may also attend brief nutrition education classes offered in the waiting room (see text). These contacts are not counted toward the two required contacts and are not documented in the WIC record.

¹Site also offers in-hospital certifications for both mother and infant. These contacts could not be observed.

²Only two contacts observed.

³Mean and range for all observed individual contacts, both low-risk and high-risk.

⁴No contacts available for observation during the six-week observation period.

⁵Only one contact observed.

Source: On-site observations.

Similarly, nutritionists reportedly provide follow-up contacts for high-risk participants in Midwest Site 1, however, the few high-risk follow-ups available for observation were conducted by a nurse.

Southeast Site 2 and both Mountain Plains sites used nutritionists and paraprofessionals to deliver nutrition education. Nutritionists were generally responsible for select high-risk follow-up contacts and often co-led group certification contacts. Paraprofessionals—diet technicians in Southeast Site 1 and specially certified WIC nutrition educators in the Mountain Plains sites—participated in certification contacts and were primarily responsible for some high-risk follow-ups and all low-risk follow-ups. Southeast Site 2 also had a lactation consultant on staff who participated in all prenatal certification classes and ran breastfeeding support groups, including one for women's partners.

In Midwest Site 2, nutrition education was provided by a combination of nurses, paraprofessionals, and nutritionists. Participants met individually with both a nurse and a paraprofessional during prenatal certification appointments. Follow-up classes, when taught, were conducted by either a paraprofessional or a nutritionist. The few individual high-risk follow-up contacts observed were conducted by nutritionists.

Breastfeeding Promotion Programs

The techniques used to promote breastfeeding varied widely across sites, as shown in Exhibit 2.3. Southeast Site 1 had the least expansive program, however, as noted elsewhere in this report, the need for breastfeeding promotion was lower here than elsewhere because a high percentage of women entered the WIC Program already intending to breastfeed. The same is true, but to a lesser extent, for Mountain Plains Site 1. The other four sites had fairly comprehensive breastfeeding promotion programs in place at the time data were collected.

Four sites had certified lactation consultants on staff. Four sites offered special classes or support groups for women interested in breastfeeding and for breastfeeding mothers. Southeast Site 2 offered a support class for women's partners.

The breastfeeding promotion program in Mountain Plains Site 2 had several unique features. First, staff used a specially-developed protocol to assess women's motivation to breastfeed and then tailored counseling accordingly. The agency distributed a breastfeeding newsletter and had interactive question-answer displays in all waiting areas. In addition, each WIC delivery site reserved two hours per week for first-time breastfeeders to facilitate access to clinic staff when needed. Finally, staff tried to schedule three or more individual follow-ups with all breastfeeding women.

Other less common characteristics of breastfeeding promotion programs in study sites included distribution of free manual breast pumps in the two Midwest sites; a lending program for electronic breast pumps in Southeast Site 2; and peer counseling programs in Southeast Site 2 and Midwest Site 2. Peer counseling programs provide women who are interested in or initiating breastfeeding with the opportunity to receive advice from peers who have successfully breastfed. A peer counseling program in Midwest Site 1 was discontinued some time prior to the study, reportedly because of problems with misinformation disseminated by peer counselors.

Exhibit 2.3

Characteristics of Breastfeeding Promotion Programs in Study Sites

Characteristic	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Lactation consultant on staff ¹		✓	✓	✓		✓
Breastfeeding support classes/groups ²		✓		✓	✓	✓
Peer counseling program		✓				✓
Lend electronic breast pumps		✓				
Free manual breast pumps					✓	✓
Inservices for staff	✓	✓	✓	✓	✓	✓
Promote breastfeeding to local MDs, hospitals	✓	✓			✓	✓
All participants assessed individually following written protocol				✓		
Interactive educational displays				✓		
Special policy for access to WIC staff				✓		

¹Midwest Site 1 did not have a lactation consultant on staff because this service was offered in the hospitals used by WIC participants.

²Breastfeeding support classes in Southeast Site 2 included one for women's partners.

Source: Local agency director interviews.

Staff/Participant Interactions

On-site observation forms included a list of 15 specific characteristics believed to be indicative of high-quality staff/participant interactions. As described previously, these characteristics were identified jointly by FNS, Abt, and members of the project's technical advisory group. On-site observers documented the presence or absence of each characteristic in each observed nutrition education contact.

To provide an overall picture of the quality of interactions in each site, as well as information about each of the specific indicators, data for all observations were combined, within sites, and the number of contacts in which each indicator was observed was tallied. One indicator that applied only to classes ("uses one or more interactive activities") was excluded from this tabulation because in four of the six study sites fewer than five classes were observed, either because the site didn't offer classes (Mountain Plains Site 2) or, as discussed above, because scheduled classes were canceled due to high no-show rates. An indicator that assessed the prevalence of participant questions or participant-initiated lines of discussion was also omitted because, as discussed below, results for this indicator were not consistent with other indicators and may reflect something other than the quality of staff/participant interactions.

Next, a rank was assigned to each indicator, based on the percentage of observations in which the positive behavior was exhibited, with a higher rank indicating greater frequency. The ranks used were:

- 4: Indicator observed in 75% or more of all observed contacts;
- 3: Indicator observed in 50 - 74% of observed contacts;
- 2: Indicator observed in 25 - 49% of observed contacts; and
- 1: Indicator observed in less than 25% of observed contacts.

Finally, rank scores for each indicator were tallied to compute a total score for each site—the higher the score, the more often the desired behavior was observed. The range of possible scores was 13 (13 x 1) to 52 (13 x 4).

An all-sites score was also computed for each indicator to facilitate identification of trends across sites. The maximum possible score was 24 (i.e., if all six sites received an individual score of 4) and the minimum possible score was 6 (i.e., if all six sites received an individual score of 1). Results are shown in Exhibit 2.4.

The data indicate that, overall, WIC nutrition educators did an excellent job in:

- addressing participants' questions or concerns in a supportive manner;
- providing opportunity for questions;
- offering specific and appropriate ideas on how to implement recommended behaviors (e.g., ways to increase milk consumption other than drinking milk as a beverage);
- maintaining non-judgmental attitudes; and
- providing positive feedback on current dietary intake (i.e., highlighting the positive before discussing needed improvements).

At the same time, staff in five of the six sites frequently did not assess participants' understanding of the information being communicated or attempt to determine whether there were barriers that might affect a participant's ability to adopt a recommended behavior. Staff in four of the six sites often did not ask about participants' willingness to make a recommended behavior change. And, in three sites, WIC staff tended to assign, rather than negotiate, goals for behavior change.

It is interesting to note that use of group contacts (classes) did not preclude the assessment of participants' willingness to change or negotiation of goals for behavior change. Nor did use of individual contacts ensure these desirable interactions. For example, the relative frequency of these behaviors was substantially lower in Southeast Site 1 and in both Midwest sites, in comparison to Southeast Site 2, even though observations in the former sites were almost all individual appointments while more than half of the observations in the latter site were classes. Obviously, the nature of classes precludes detailed interaction and negotiation with each individual participant,

Exhibit 2.4

Quality of Staff/Participant Interactions in Observed Nutrition Education Contacts

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
WIC Nutrition Educator...	Number of Contacts in Which Positive Behavior/Interaction Was Observed						
Introduces self by name	1	4	3	4	1	3	16
Has a name tag for identification	2	4	1	1	1	1	10
Provides general overview of session	2	3	1	2	2	1	11
Investigates barriers to recommended behaviors	2	4	2	2	2	2	14
Investigates willingness to make behavior changes	1	4	2	3	2	2	14
Investigates understanding of key concepts	1	3	2	1	1	2	10
Offers specific and appropriate ideas on how to implement recommended behaviors	4	4	3	4	3	4	22
Provides opportunity for questions	4	4	4	3	4	4	23
Addresses questions or concerns in a supportive manner	4	4	4	4	4	4	24
Maintains a non-judgmental attitude at all times	3	3	3	3	4	4	20
Provides positive feedback about current dietary intake ¹	4	4	1	4	4	3	20
Discusses all risk factors ¹	4	4	1	2	2	3	16
Works cooperatively with participant to negotiate goals for behavior change/improvement ¹	1	4	1	3	1	3	13
TOTAL SCORE	33	49	28	36	31	36	N/A
Number of contacts observed	21	26	30	30	18	28	153
Individual (including individual preceded by video)	17	11	22	30	17	25	122
Classes	4	15	8	0	1	3	31

¹Considered only in observations of individual contacts.

Source: On-site observations.

however, the general process of investigating barriers and discussing possible means for making desired behavior changes can and did take place in group settings.

Nutrition educators in five of the six study sites often overlooked attention to general courtesies such as wearing a name tag and providing an overview of what to expect before commencing with a contact. Staff in two sites rarely introduced themselves by name.

Participant questions and participant-initiated lines of discussion were rarely observed in any site. Although WIC staff apparently did an excellent job of providing an opportunity for questions, and addressed questions that did come up in a supportive manner, relatively few participants spoke up during nutrition education contacts. Being in a group setting did not affect this behavior. In fact, the highest rate of participant involvement, although still less than 50 percent, occurred in Southeast Site 2, where more than half of the nutrition education contacts involved classes. Although the available data do not permit a detailed assessment of reasons for this lack of direct interaction on the part of WIC participants, the data presented above, as well as data on participant satisfaction presented in Chapter 5, suggest that it is not related, in a direct or substantial way, to the behavior of WIC staff.

Interactions Related to Breastfeeding Promotion

The on-site observation form included five items that focused specifically on interactions related to breastfeeding promotion. These items were coded in all prenatal certification contacts. Data were tabulated and scored using the system described above. Sample sizes for this analysis are quite small, however, so findings should be viewed with some caution.

The available data suggest that staff in all sites advocated breastfeeding and remained supportive and non-judgmental if participants indicated a preference for bottle feeding or expressed concerns about breastfeeding (Exhibit 2.5). In addition, with the exception of Southeast Site 1, WIC staff investigated potentially problematic beliefs about breastfeeding among women who were hesitant or resistant. (The number of women in Southeast Site 1 who expressed some concern about breastfeeding was comparable to the other sites).

WIC staff in most sites did not tend to ask how family and friends' felt about breastfeeding. The only site in which this was noted with any frequency was Southeast Site 2 which, as noted in a preceding discussion, had a special class for partners of women interested in breastfeeding.

Physical Environment

Five aspects of the physical environment were assessed in all observations, including factors such as privacy, temperature, and noise level. The data were analyzed using the scoring procedure described in previous sections and are presented in Exhibit 2.6. As the data illustrate, most study sites had appropriate and adequate space in which to conduct nutrition education contacts. Facilities were private enough for conversation, temperatures were comfortable, and staff were not interrupted by telephones or the comings and goings of other clinic staff.

The only site in which the physical environment may have affected the quality of nutrition education contacts was Mountain Plains Site 2. In this site, only one of the 30 observed contacts was conducted in a space that was both private and quiet. All other contacts were conducted in large

Exhibit 2.5

Quality of Staff/Participant Interactions Related to Breastfeeding Promotion

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
WIC Nutrition Educator...	Number of Contacts in Which Positive Behavior/Interaction Was Observed						
Advocates breastfeeding	4	4	4	4	4	4	24
Remains supportive and non-judgmental if participant reports preference for bottle feeding	2	4	3	4	4	3	20
Addresses concerns about breastfeeding in a supportive manner	4	4	4	4	4	4	24
Investigates beliefs about potential barriers to breastfeeding	2	4	3	4	4	3	20
Investigates family/friends' support of breastfeeding	1	3	1	2	1	2	10
TOTAL SCORE	13	15	15	18	17	16	N/A
Number of contacts observed	8	8	8	8	8	12	52

Note: Interactions related to breastfeeding promotion were observed and coded only for prenatal certification contacts.

Source: On-site observations.

Exhibit 2.6

Environmental Characteristics of Observed Nutrition Education Contacts

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
Environmental Characteristic	Number of Sessions in Which Positive Characteristic Was Observed						
Space is private enough so that others cannot easily overhear conversation	4	4	4	1	4	4	21
Temperature is comfortable: not too warm or too cold	4	4	4	4	4	4	24
Noise level is low enough that counselor and participant(s) can converse easily without strain or distraction	4	4	4	1	4	4	21
Session is not interrupted more than once by children	4	4	4	4	3	4	23
Session is not interrupted more than once by telephone or other clinic staff	4	4	4	4	4	4	24
TOTAL SCORE	20	20	20	14	19	20	N/A
Number of contacts observed	21	26	30	30	18	28	153

rooms where several nutrition educators met with participants at separate desks or tables without benefit of dividers or other barriers. The local agency director indicated that inadequate and inappropriate space was the most significant problem the program faces in providing nutrition education to its participants.

Toys and other activities for children were not consistently available. This did not seem to cause a particular problem, however. Disruptions caused by children were rare (one to six per site) and occurred even when toys were available (data not shown).

Topics Covered in WIC Nutrition Education Contacts

Observers recorded the topics covered in WIC nutrition education contacts using a pre-coded list. Because a variety of techniques were used to transmit information, items considered "covered" may have been discussed by a WIC nutrition educator, mentioned in a video, or included in a pamphlet or other handout given to the participant.

The data show that WIC nutrition education contacts in study sites covered a broad array of topics. In general, results were consistent with expectations, i.e., most topics included in the observation checklist received widespread or moderate coverage. Similarly, all of the topics included in both the observation checklist and the nutrition knowledge measure used in this study (developed by FNS staff) received widespread or moderate coverage.

Exhibit 2.7 summarizes the specific topics that received widespread, moderate, limited, and very limited coverage in observed prenatal certification contacts. (Detailed summaries of topics covered in both certification and follow-up contacts are provided in Exhibits D.4 - D.6). As shown, in-depth topics related to breastfeeding, e.g., importance of adequate fluid intake, dealing with common breastfeeding problems, and breastfeeding techniques and positions, were rarely covered in prenatal certification contacts.

Follow-up prenatal contacts covered many fewer topics than certification contacts. Although topics covered in follow-up contacts mirrored those covered in certification contacts, few specific topics were covered in more than 50 percent of sessions (detailed summaries are provided in Exhibits D.4 - D.6). This is an anticipated pattern because, in most sites, follow-up visits comprised brief individual contacts focused on issue(s) that were relevant to the individual participant, or classes devoted to a specific topic area. The single topic most often covered in observed prenatal follow-up contacts was recommended weight gain during pregnancy.

Postpartum certification contacts covered fewer topics than prenatal certifications (Exhibits D.7 - D.9). Given that the majority of postpartum WIC participants participate in WIC during pregnancy (and therefore receive at least some of the prenatal nutrition education services offered), this finding is not surprising. The two most common topics in postpartum certification contacts were foods included in WIC food packages (availability of different food packages for breastfeeding and nonbreastfeeding women and differences between these packages and the package received during pregnancy) and recommended infant feeding practices. It is not possible to comment on topics covered in postpartum follow-up contacts because so few of these contacts were observed.

Exhibit 2.7

Topics Covered in Prenatal Certifications

Widespread Coverage: All or Most Observed Prenatal Certifications

- Types and amounts of food to eat while pregnant *
- Recommended weight gain *
- Foods you can get with WIC vouchers
- How to use WIC vouchers
- Importance of prenatal vitamin and mineral supplements
- Infant feeding preference
- Benefits of breastfeeding *
- Effects of smoking during pregnancy *
- Effects of alcohol and drugs during pregnancy
- Dealing with complications of pregnancy
- Iron: intake, food sources, absorption *

Moderate Coverage: Half to Two-thirds of Observed Prenatal Certifications

- Effects of caffeine during pregnancy
- Participant's relative rate of weight gain * ^{1, 2}
- Combining breastfeeding and bottle feeding¹
- Importance of prenatal care¹
- Need to consult physician before taking over-the-counter medications while pregnant *
- Rationale for WIC foods/supplementary nature of food package (major WIC nutrients) *

Limited Coverage: Less than Half of Observed Prenatal Certifications

- Importance of adequate fluids while breastfeeding
- Dealing with common breastfeeding problems
- Breastfeeding support services
- Breastfeeding techniques and positions

Very Limited Coverage: Less than One in Five Prenatal Certifications

- Infant growth spurts
- Need to consult physician before taking over-the-counter medications while breastfeeding
- Breastfeeding in the hospital
- Effects of alcohol, smoking, drugs on breastfed infant

Referrals to Health and Social Services

The protocol for on-site observations called for a simple tally of referrals provided during observed nutrition education contacts. Consequently, the data presented in this section represent unqualified frequencies of the referrals made by WIC staff during the nutrition education contacts observed for this study. The data *do not* provide any information about the appropriateness of the referral patterns observed. Because referrals are supposed to be tailored to the individual needs of a participant, the absence of a referral does not necessarily imply that a referral was missed. Rather, the participant may not have needed a referral because she was already receiving needed services, e.g., prenatal care, food stamps, or Medicaid.

As Exhibit 2.8 shows, few referrals to health care or social service programs or agencies were observed. Midwest Site 1 had the largest number of referrals. Every participant in this site received at least one referral and most received referral information for a variety of programs and services (AFDC, Food Stamps, Medicaid, and health care services other than prenatal care) during the prenatal certification appointment. According to the local agency director, this is done because local services for low-income women are inadequate. Many doctors and dentists in the area refuse to take Medicaid, for example, so the WIC clinic distributes contact information for practitioners who are willing to accept such patients. A similar situation was described in the other Midwest site.

In contrast, directors in the other four sites, all county or city health departments, indicated that WIC participants had access to a wide variety of services and were usually enrolled in needed programs or services before coming to WIC. In these settings, many referrals that might come from the WIC Program were covered by affiliated departments or programs.

These data suggest that the number and type of referrals offered in local WIC agencies is more reflective of the context or local environment in which programs operate than of the quality of nutrition education offered to program participants.

Exhibit 2.8

Referrals Made During Observed Nutrition Education Contacts

Referral	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
	Number of Contacts in Which Referral Was Observed						
None	19	14	26	18	0	16	93
Prenatal care	0	0	0	0	2	1	3
AFDC and/or Food Stamps	0	5	0	4	16	0	25
Medicaid	0	5	1	2	16	0	24
Other family/personal assistance	0	5	0	0	1	0	6
Counseling for smoking, alcohol, drugs	0	3	1	2	13	1	20
Child birth classes	0	0	0	1	0	0	1
Breastfeeding support	2	9	3	4	3	8	29
Health care services (other than prenatal care)	0	6	2	4	16	4	32
Other	0	5	0	0	1	1	7
Number of contacts observed	21	26	30	30	18	28	153
Percent of contacts with at least one referral	10%	46%	13%	40%	100%	43%	39%

Notes: Data reflect simple tally of referrals made during observed nutrition education contacts. Lack of referrals does not necessarily mean referrals were overlooked. Participants may not have needed referrals because they were already receiving needed services prior to WIC enrollment.

Numbers of referrals may not total to number of observations because participants may have received more than one referral.

Source: On-site observations.

Chapter 3

Participants' Receipt of Nutrition Education Contacts

This chapter describes study participants' prenatal and postpartum nutrition education experiences. Information is presented on the number of documented nutrition education contacts received during each certification period based on data from WIC administrative records.¹ In addition, participants' self-reports are summarized regarding the types of information imparted during WIC nutrition education contacts. The final section of the chapter describes characteristics of women who received a second nutrition education contact during the prenatal period.

Number of WIC Nutrition Education Contacts Received

The amount of nutrition education received by any WIC participant is dependent upon three separate influences: (a) what is offered by the local agency; (b) what is accepted by the participant (conditional on what is offered); and (c) the timing of certification (e.g., women who enroll earlier in their pregnancies have more opportunities for nutrition education than those who enroll later). Moreover, participants' acceptance of WIC nutrition education offerings may be influenced by personal characteristics and/or by characteristics of the nutrition education activities offered. Differences in the amount of nutrition education received by sample members may reflect any of these influences.

Prenatal Nutrition Education Contacts

The number of potential nutrition education contacts available to participants during the prenatal certification period is influenced primarily by the timing of WIC enrollment and the local agency's schedule for voucher issuance. For women enrolling at the same point in pregnancy, the minimum number of possible contacts is higher in local agencies that require more frequent voucher pick-up, e.g., monthly or bimonthly pick-up *versus* tri-monthly or quarterly pick-up.

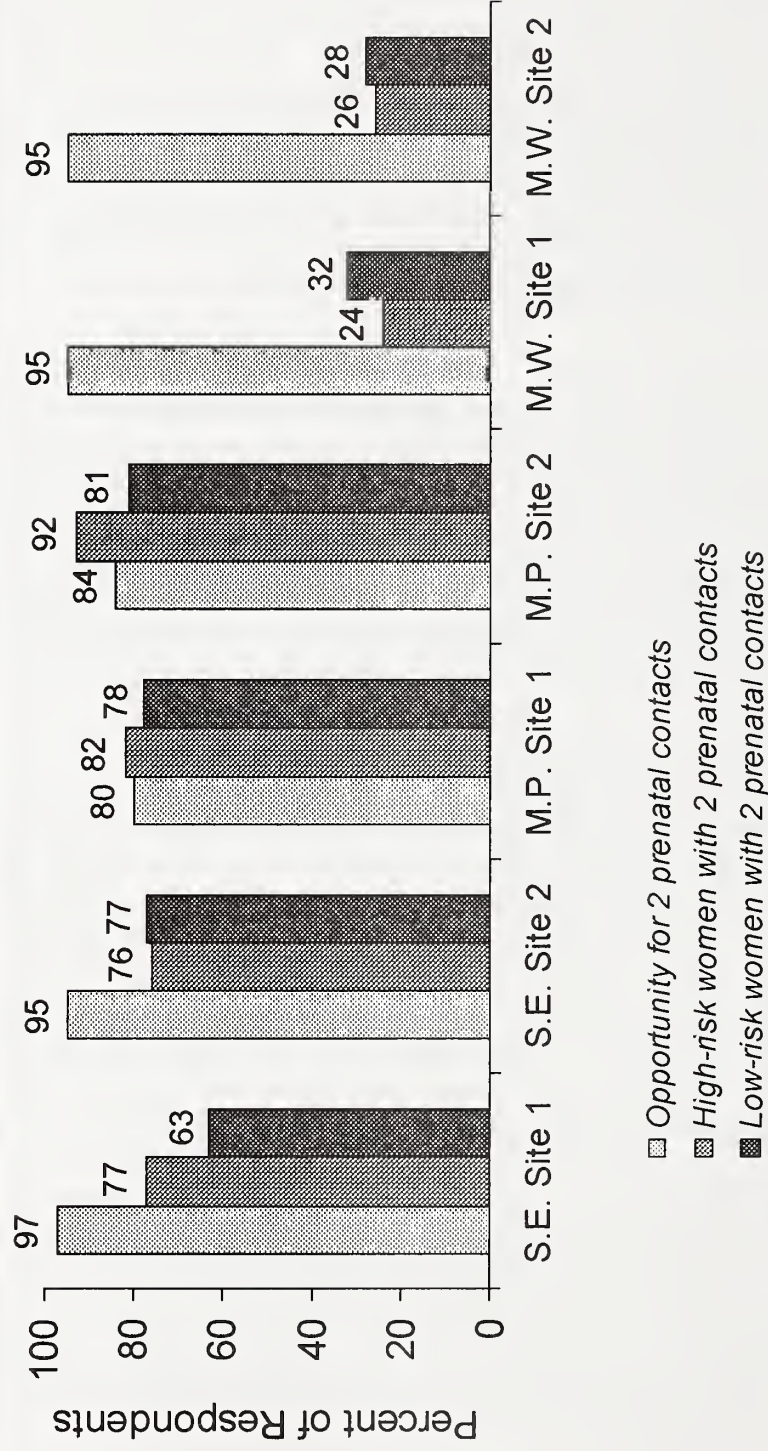
In each of the six study sites, a majority of women (80% - 97%) had the opportunity to receive two nutrition education contacts between the time they were certified (which counts as the first contact) and the birth of their babies. According to WIC administrative records, however, the extent to which this goal was actually achieved varied across sites. In general, patterns were similar within State.

In the two Southeast sites, roughly three-quarters of the prenatal participants enrolled in the study received two (or more) nutrition education contacts between certification and the birth of their babies (Exhibit 3.1). In Southeast Site 2, high-risk participants were just as likely to receive two contacts as low-risk participants. In Southeast Site 1, fewer lower-risk participants received a second contact (newsletters distributed by voucher clerks). This may be because participants did not take newsletters when they came in to pick up vouchers or because site staff were less diligent about documenting these contacts in WIC records.

¹ A separate analysis was carried out to assess the comparability of data from WIC administrative records and participant self-reports. Results of this analysis support use of WIC records for counts of nutrition education contacts and participant self-reports for information about topics covered and referrals received.

Exhibit 3.1

Prenatal Nutrition Education Contacts: Opportunity For and Receipt of Two Contacts



Note: Documented contacts include all recorded contacts from time of certification to birth of baby. Certification counts as one contact.

Source: WIC records.

The fact that only about 75 percent of study participants in these sites actually received two prenatal nutrition education contacts, when 95 percent or more had the opportunity, suggests that some participants did not participate in follow-up nutrition education activities made available to them. The approximate size of the gap between potential and actual receipt of two prenatal nutrition education contacts is consistent with expectations based on on-site observations and local agency director reports. As noted in Chapter 2, historical no-show rates for follow-up prenatal contacts in both sites were in the neighborhood of 20-25 percent.²

Participants in Southeast Site 2 may actually have received supplementary nutrition education through brief classes taught in the waiting room. These classes are general in nature, covering a wide variety of nutrition topics, and are not considered part of participants' required nutrition education contacts. These contacts are not documented in WIC records.

In the two Mountain Plains sites, where vouchers were issued only once every three months, only 80 and 84 percent of study participants, respectively, had the opportunity to receive two nutrition education contacts during the prenatal period, assuming that contacts occurred in association with voucher pick-up.³ As Exhibit 3.1 illustrates, the percentage of women in these sites who actually received two contacts was roughly equivalent to or greater than the percentage who had the opportunity for two contacts. In fact, the two Mountain Plains sites were more successful than any of the other sites in providing two prenatal nutrition education contacts, despite the use of tri-monthly voucher issuance which, in theory, decreases the number of contact opportunities. This trend is entirely consistent with no-show rates documented during the on-site observations and with historical patterns reported by local agency directors.

Although the opportunity for two prenatal nutrition education contacts in the Midwest sites was no different from the other sites with bimonthly voucher issuance (the two Southeast sites), the percentage of women who actually received two contacts, based on data from WIC records, was markedly lower (Exhibit 3.1). In both sites, less than one-third of the study participants received two prenatal nutrition education contacts. This pattern conforms with findings from the on-site observations as well as with information provided by local agency staff. As noted in Chapter 2, one factor that may contribute to this problem is use of proxies to pick up vouchers. In comparison to the other four sites, the number of proxy pick-ups reported by sample members was substantially higher in the two Midwest sites (Exhibit 3.2).

Postpartum Nutrition Education Contacts

The number of potential postpartum nutrition education contacts is influenced by a participant's decision to certify for the postpartum period, the timing of certification, and the assigned participant classification (regular postpartum woman (certified for six months) or breastfeeding woman (may be certified for up to 12 months)).

² The no-show rate seen during the observation period was higher in Southeast Site 2, however this was probably due to the fact that a hurricane affected the local area for at least a week.

³ The lower percentage for Mountain Plains Site 1 is a function of later (second and third trimester) enrollments.

Exhibit 3.2

Reported Frequency of Proxy Voucher Pick-ups Between Certification and the Prenatal Survey

Number of Reported Proxy Pick-ups	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1 (n = 284)	Site 2 (n = 343)	Site 1 (n = 296)	Site 2 (n = 205)	Site 1 (n = 213)	Site 2 (n = 228)
None	94.2%	89.7%	99.3%	94.3%	74.7%	79.6%
1-2	5.8	9.6	0.7	5.7	19.1	16.6
3 or more	0.0	0.7	0.0	0.0	6.2	3.8

Note: Percentages may not sum to 100 due to rounding.

Source: Prenatal survey.

The timing and frequency of postpartum certifications in each of the study sites is summarized in Exhibit 3.3. As the data illustrate, 80 percent or more of women for whom abstract data were available did certify for postpartum WIC participation. In comparison to other sites, the percentage of women in Southeast Site 1 who did not enroll as postpartum participants (19.7%) was somewhat high. This finding is consistent with patterns observed during on-site observations and with anecdotal reports from local agency staff. This agency required women to attend two separate appointments to complete infant and postpartum certifications. The infant certification is generally done first and some women do not return for the subsequent postpartum certification appointment.

In most sites, a majority of women completed postpartum certification within six weeks of the expected date of delivery, i.e., within the time allowed before termination of prenatal WIC benefits. The time lapse between the birth of the infant and certification of the mother was greatest in the two Southeast sites, particularly Site 2. In both cases, a substantial number of women were not certified for postpartum participation until after the six week transition period.

Record abstract data were collected for virtually all women at least six months after the birth of their babies. Therefore, the data covered the full postpartum certification period for all women except those who were still breastfeeding (less than 12%, across all sites). While these women were eligible to participate in WIC for up to 12 months, as long as they continued breastfeeding, they should also have received two nutrition education contacts by the time WIC records were abstracted. As noted in Chapter 1, WIC regulations require that nutrition education be offered at least quarterly, or once every three months, to participants whose certification period extends beyond six months.

All but one sample member had the opportunity to receive two postpartum nutrition education contacts, with postpartum certification counted as one contact, prior to the time abstract data were collected. As shown in Exhibit 3.4, however, the percentage of women who actually did so ranged from a low of five percent (Midwest Site 1) to a high of 59 percent (Southeast Site 2). The fact that postpartum women appear to take even less advantage of nutrition education opportunities than prenatal participants is consistent with findings from the on-site observations.

Information and Advice Provided by WIC Staff

Study participants were asked whether WIC staff provided information or advice about a variety of topics considered central to WIC nutrition education. They were also asked about receipt of referrals from WIC staff and, if a referral had been received, whether they actually contacted the subject agency or office. These data are discussed in the following sections.

Topics Covered

The prenatal survey included a list of 16 topic areas thought to be central to WIC nutrition education efforts (Exhibit 3.5). The list was structured to cover most of the items included in the nutrition knowledge measure (see Chapters 1 and 4), as well as the topic areas documented in on-site observations. Three nonsense topics, noted in Exhibit 3.5, were also included to provide a means of assessing the relative accuracy of respondents' answers. Ten of the 16 topics and all three of the nonsense items were included in the postpartum survey. Exact wording for each survey item may be found in the sample prenatal survey provided in Appendix A.

Exhibit 3.3

Frequency and Timing of Postpartum Certification

Timing of Postpartum Certification	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1 (n = 284)	Site 2 (n = 343)	Site 1 (n = 296)	Site 2 (n = 205)	Site 1 (n = 213)	Site 2 (n = 228)
Did not certify	19.7%	7.9%	14.9%	6.3%	7.5%	5.7%
Within 6 weeks of EDD	51.1	42.0	74.3	85.4	91.1	90.8
6 or more weeks after EDD	29.2	50.2	11.8	8.3	1.4	3.5

Notes: EDD = Estimated date of delivery.

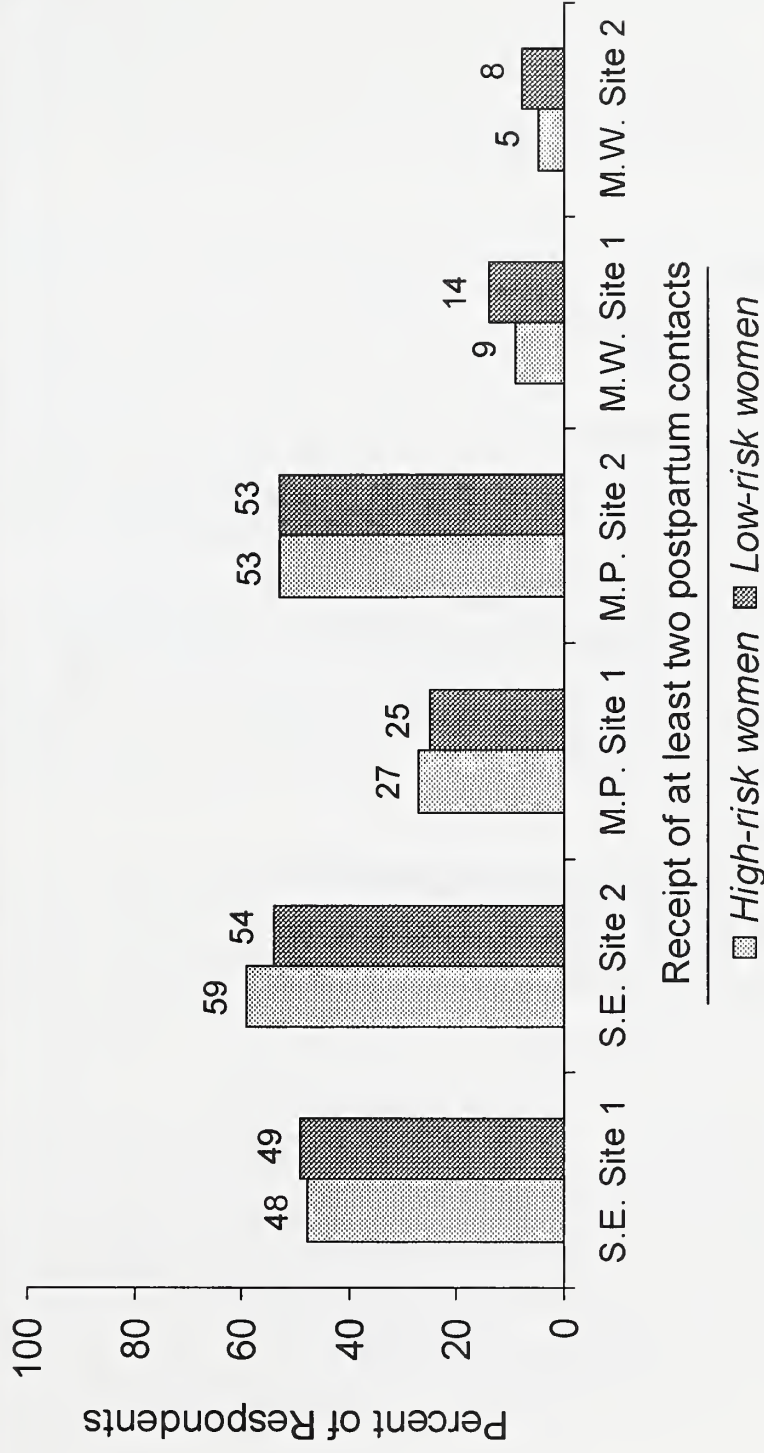
Prenatal WIC benefits are terminated six weeks after the EDD. Certification as a postpartum or breastfeeding participant during this time frame prevents the loss of WIC benefits (food package).

Percentages may not sum to 100 due to rounding.

Source: WIC records.

Exhibit 3.4

Receipt of Two Postpartum Nutrition Education Contacts



Notes: Virtually all postpartum participants had the opportunity to receive two nutrition education contacts prior to the postpartum survey.

Documented contacts include all recorded contacts between birth of baby and time WIC records were abstracted (generally six months or more postpartum).

Source: WIC records.

Exhibit 3.5

Nutrition Education Topics Assessed in Prenatal and Postpartum Surveys

WIC Foods

How to use WIC vouchers

Foods you can get with WIC vouchers

Prenatal Topics

Types and amounts of food to eat while pregnant

How to get more halite in your diet¹

Importance of prenatal care

Weight gain during pregnancy

Dealing with complications of pregnancy²

Need to consult physician before taking over-the-counter medications

Effects of alcohol, smoking, caffeine and other drugs

Importance of prenatal vitamin and iron pills

Chewing gums to avoid while pregnant¹

Breastfeeding/Infant Feeding Topics

Benefits of breastfeeding

Importance of adequate fluids while breastfeeding

Importance of glucose intake while breastfeeding¹

Dealing with typical breastfeeding problems³

Importance of iron-fortified formula

Introducing solid foods

Avoiding bottle caries

Breastfeeding support services

¹These items are "nonsense" topics inserted to assess the reliability of respondents' answers. None of these topics would actually have been covered in WIC nutrition education contacts.

²Includes nausea, vomiting, heartburn and constipation.

³Includes sore nipples, infants who won't latch on, and planning breastfeeding around normal daily activities.

For the most part, respondents' self-reports were consistent with findings from the nutrition education observations: topics observed in all or most of the observations were generally reported by 80 percent or more of the respondents (Exhibits D.10 - D.12). Notable exceptions included the following:

- In Southeast Site 2, the percentage of prenatal respondents reporting receipt of information on weight gain during pregnancy was *lower* than expected based on on-site observations. Only 70 percent of prenatal survey respondents reported receiving information or advice about weight gain. However, this topic was documented in all of the observed prenatal contacts (both certifications and follow-ups).

A potential explanation for this discrepancy is that the wording of the survey item, which asked about receipt of information on "how much weight *you* should gain while pregnant," was interpreted by some women as receipt of individualized advice—something that few women in this site received. As discussed in Chapter 2, nutrition education contacts in this site were almost exclusively classes; only some high-risk women received individual contact. Thus, while the topic of weight gain may have been covered in classes, women were unlikely to receive personalized advice on this issue unless their pattern of weight gain or pre-pregnancy weight classified them as high-risk.

- There were a few instances in which the percentage of respondents reporting receipt of information was substantially *greater* than expected based on on-site observations. This was true in all sites except Midwest Site 2 for information on the importance of adequate fluid intake while breastfeeding. It was also true in Southeast Site 1 for dealing with the topic of typical breastfeeding problems, and in both Midwest sites for breastfeeding support services.

It is possible that there were real differences in the topics covered during on-site observations and the topics covered in the contacts received by sample members. A more likely explanation, however, is that respondents attributed knowledge gained elsewhere to the WIC Program or, as described below, reported receiving information that was not actually provided.

As expected, a greater percentage of respondents reported coverage of topics related to breastfeeding and infant feeding at the time of the postpartum survey than the prenatal survey (increases ranged from 6 to 40 percentage points for different topics). In general, more than 80 percent of the respondents in all sites reported that breastfeeding/infant feeding topics were covered by WIC staff by the time of the postpartum survey. The only such topics that were reported by less than 80 percent of respondents were: dealing with typical breastfeeding problems; breastfeeding support services; and introducing solid foods. It is not possible to assess consistency between participant self-reports and on-site observations for topics discussed in postpartum contacts because so few postpartum contacts were observed.

Responses for "Nonsense Topics"

As noted in the introduction to this chapter, the survey included three "nonsense" items meant to provide a barometer of the relative reliability of respondents' self-reports about information provided

by WIC. The nonsense items included: how to get more halite in your diet; chewing gums to avoid while pregnant; and the importance of glucose intake while breastfeeding.

With the exception of Southeast Site 1, fewer than ten percent of the respondents reported receiving information about chewing gums to avoid while pregnant. A larger percentage of respondents were apparently confused by the more official sounding nonsense topics — halite in the diet and, especially, glucose intake while breastfeeding. In most sites, roughly one-quarter of the respondents reported receiving information on halite at the time of the prenatal survey. The prevalence of inappropriate responses was higher for the postpartum survey (30 - 47% of respondents). A similar pattern was noted for the item on glucose intake while breastfeeding, however, the prevalence of inappropriate response to this item was greater, in all sites, for both the prenatal and postpartum surveys (29 - 41% for the prenatal survey and 50 - 62% for the postpartum survey).

Ordinarily, this level of inappropriate response might be considered indicative of poor respondent reliability. However, two patterns in the data suggest that, overall, respondent reliability was reasonably good. First, as noted in the preceding section, the overall picture painted by the self-report data is consistent with data from the on-site observations. Second, the chewing gum item — the most straightforward of the three nonsense topics — was handled appropriately by 90 percent or more of the respondents in all sites except Southeast Site 1. Viewed in concert, these patterns suggest that respondents were thrown by the more technical terms — halite and glucose — used in the other two nonsense topics. Thus, a reasonable conclusion is that, while the overall reliability of WIC participants' self-reports regarding topics covered in WIC nutrition education is generally good, it may decrease as the complexity of the topic being queried, i.e., the number of technical terms involved, increases. This tendency may explain the few examples of apparent over-reporting noted in the preceding section.

There are several potential explanations for the fact that inappropriate response to nonsense topics increased over time. One is that women are provided with increasing amounts of information and consequently lose some of their ability to discriminate between actual and potential topics. It is also possible that women attended to the postpartum survey less closely because it was the third time they had completed the survey and/or because they were caring for young infants. Finally, the mere fact that the nonsense topics were mentioned on three different occasions may have prompted positive responses, i.e., respondents may have remembered hearing the terminology before but did not attribute it appropriately.

As mentioned above, results for all three nonsense topics were markedly different for Southeast Site 1. Among prenatal respondents in this site, 89 percent reported receiving advice about how to obtain adequate amounts of halite (compared to 23 - 35% in other sites); 36 percent reported receiving information about chewing gums to avoid during pregnancy (compared to 4 to 9% in other sites); and 57 percent reported hearing about the importance of glucose during breastfeeding (compared to 29 - 41% in other sites). A likely explanation for these findings is an unfamiliarity with the language, particularly technical terms, among the many recent immigrants in this population.

Referrals Made by WIC Staff

In both the prenatal and postpartum surveys, respondents were asked whether they had been referred by WIC staff to any other programs or services. Respondents who responded affirmatively

were asked to identify the programs or services to which they had been referred and to indicate whether they had followed through on the referral.

In assessing the prevalence of referrals to particular types of programs and services, computed rates of referral were based on appropriate subgroups of participants wherever possible. For example, the base for referrals to prenatal care included only respondents who were not enrolled in prenatal care at baseline. Likewise, the base for referrals to counseling programs for cigarettes, alcohol, and drugs included only respondents who reported use of cigarettes or alcohol since becoming aware of their pregnancy, and the base for referrals to breastfeeding support services included only women who indicated an intention to breastfeed, either exclusively or in combination with formula, at the time of the baseline survey.

An attempt was made to make similar partitions in the sample for referrals to AFDC, Medicaid, and the Food Stamps program. However, when the sample was divided into eligible and ineligible groups using available data on household income and composition, the results did not conform well with other survey data. For example, some women who reported being enrolled in AFDC or Food Stamps at baseline were classified as ineligible. Similarly, some of the women who reported receiving referrals for these programs were classified as ineligible. At least part of this problem is attributable to the fact that the available data on income (reported in ranges) and household composition is not detailed enough to support development of a rigorous screening tool. Given the limitations of the available data, referral rates reported for AFDC, Food Stamps, and Medicaid reflect an overall rate for all respondents. The number of referrals reported was so low that results were essentially identical even when income eligibility criteria were applied to screen out potentially ineligible sample members.

Exhibit 3.6 presents data on referrals reported by study participants. In reviewing these data, it is important to realize that the relatively low prevalence of referrals does not necessarily indicate that WIC staff overlooked participants' needs. It may be that women did not receive referrals because they were already enrolled in needed programs and services or because services were provided as part of routine care in the multi-faceted public health and social service agencies in which most local agencies were located. It is also possible that referrals were offered and not recalled, however, the low prevalence of referrals noted in the on-site observations suggests that this is not the case. The findings reported here are best interpreted as indicative of the simple prevalence of referrals in study sites, as reported by study participants, rather than the appropriateness or completeness of WIC referrals.⁴

The percentage of respondents reporting no referrals ranged from a low of about 63 percent to a high of 97 percent. In general, the most frequently reported referral was for breastfeeding support services. Self-reported referrals to counseling programs for cigarettes, alcohol, and/or drugs in Midwest Site 1 were lower than anticipated based on on-site observations (such referrals were included in 16 of 18 observations). This may be due to intentional under-reporting of these rather sensitive referrals.

Respondents who reported receiving one or more referrals were asked whether they actually contacted the subject agency or program. As evident in Exhibit 3.6, the total number of participants referred to any specific program or service was very small. Consequently, answers to the follow-up question were examined for the pooled sample, rather than by site, and only for agencies and programs to which more than 10 women, across all sites, had been referred.

⁴ Self-reports could not be cross-checked with WIC records because most sites did not document referrals.

Exhibit 3.6

Participant Self-Reports About Referrals Received From WIC Staff

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1 (n = 324)	Site 2 (n = 329)	Site 1 (n = 333)	Site 2 (n = 237)	Site 1 (n = 216)	Site 2 (n = 233)
Referrals Received						
<i>Prenatal Survey</i>						
None	96.9%	84.5%	84.4%	62.9%	64.8%	76.8%
Prenatal care ¹	N/A	0.0	0.0	4.0	11.8	7.4
AFDC and/or Food Stamps	0.0	N/A	4.5	5.1	4.2	3.9
Medicaid	0.0	4.6	1.8	5.1	4.2	6.4
Other family/personal assistance	0.0	1.5	2.4	1.7	1.4	3.4
Counseling for smoking, alcohol, drugs ²	N/A	0.0	0.0	26.3	0.0	0.0
Child birth classes	0.9	2.4	0.9	5.5	4.2	0.4
Breastfeeding support ³	0.0	1.0	4.1	22.2	12.7	2.8
Health care services (other than prenatal care)	1.2	4.6	3.3	7.6	9.7	10.3
<i>Postpartum Survey</i>						
None	(n = 301) 93.4	(n = 344) 81.4	(n = 310) 75.6	(n = 218) 59.0	(n = 216) 59.5	(n = 239) 70.2
Prenatal care ¹	N/A	N/A	N/A	N/A	N/A	N/A
AFDC and/or Food Stamps	1.7	N/A	5.7	7.2	6.0	7.1
Medicaid	0.9	4.4	2.0	4.8	4.4	7.1
Other family/personal assistance	1.2	2.2	4.0	1.6	1.6	6.4
Counseling for smoking, alcohol, drugs ²	N/A	N/A	N/A	N/A	N/A	N/A
Child birth classes	1.2	3.2	1.2	5.2	3.6	0.4
Breastfeeding support ³	0.0	14.7	6.7	21.4	12.2	4.8
Health care services (other than prenatal care)	2.3	5.7	7.5	10.0	14.7	14.7

Note: In the postpartum survey, respondents were asked to report all referrals received between prenatal certification and date of the postpartum survey.

N/A = Data not reported because referral is not relevant in postpartum period or because base sample is less than 25.

¹The base for referrals to prenatal care includes only respondents who were not enrolled in prenatal care at the time of the baseline survey.

²The base for referrals to smoking, alcohol, and drug counseling includes only respondents who reported use of cigarettes or alcohol since becoming aware of pregnancy.

³The base for referrals to breastfeeding support includes only respondents who reported an intention to breastfeed, either exclusively or in combination with formula, at the time of the baseline survey.

Exhibit 3.7

Participant Self-Reports About Follow-up on Referrals Received from WIC Staff

Referral Received	Percentage Who Followed Up on Referral ¹
Medicaid	80%
Other Personal/Family Assistance	73
Healthcare services (other than prenatal care)	63
AFDC	60
Food Stamp	55
Prenatal care	53
Child birth classes	40
Breastfeeding support	32
Counseling for smoking, alcohol, drugs	N/A
<i>All types of referrals</i>	53

¹By time of postpartum survey.

N/A = Data not reported because base sample is less than 25.

The data indicate (Exhibit 3.7) that more than half of the participants who reported a referral followed through on it. Overall, 53 percent of those referred indicated that they had contacted the agency or program in question by the time of the postpartum survey. Follow-through was greatest for referrals to Medicaid (80% of 61 referrals); personal or family assistance (73% of 33 referrals); and health care other than prenatal care (63% of 118 referrals).

Relationship Between Nutrition Education Offered and Received

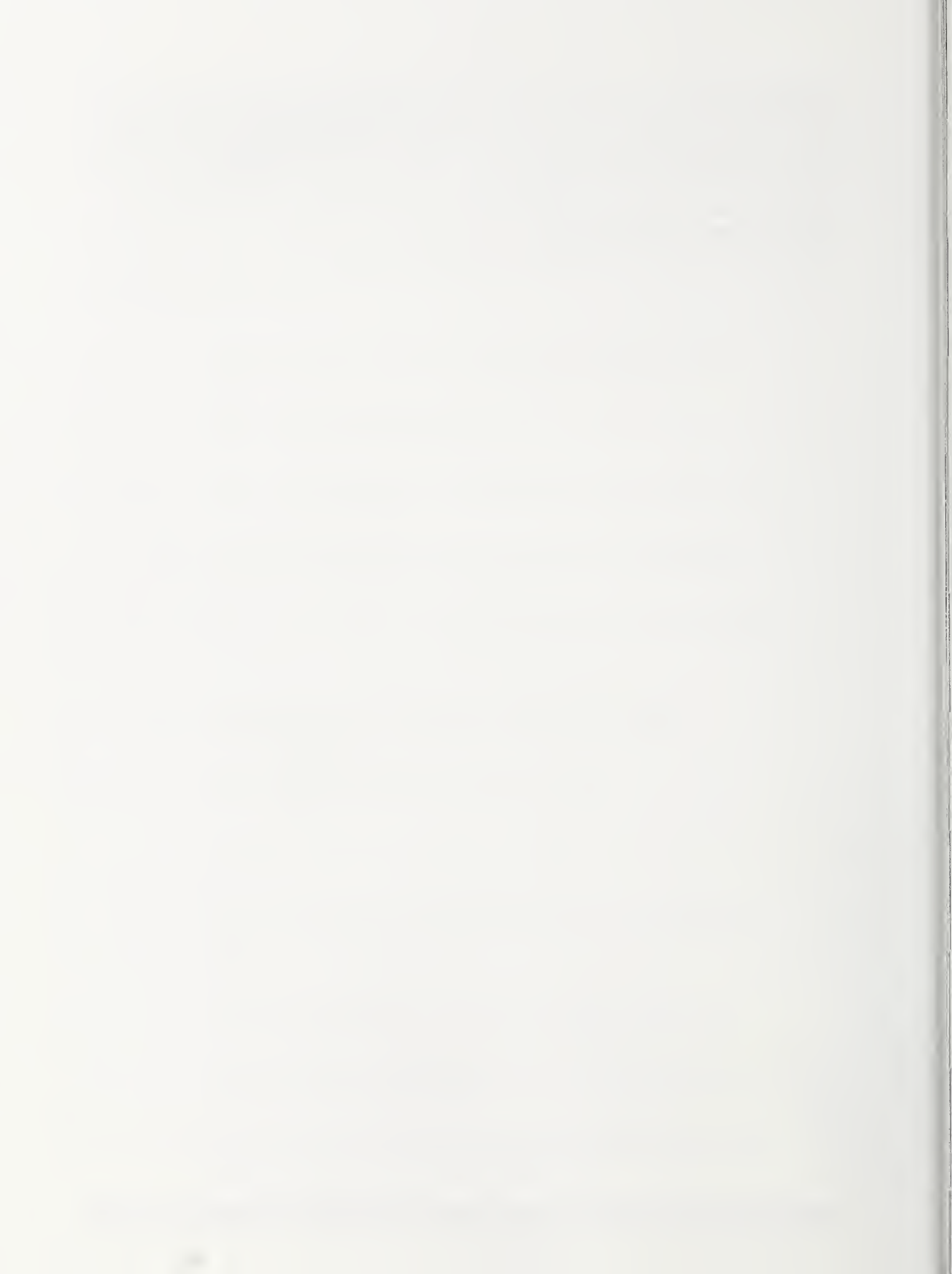
The data presented in the beginning of this chapter indicate that some WIC participants did not take full advantage of the nutrition education opportunities made available to them. While a majority of participants in all sites had the opportunity to receive a second *prenatal* contact, the proportion of women who actually did so, according to WIC administrative records, ranged from about 25 percent in the two Midwest sites to 92 percent in Mountain Plains Site 2 (see Exhibit 3.1).

These data demonstrate clearly that, while the amount of nutrition education offered is under the control of local WIC staff, the amount of nutrition education received is controlled by the individual WIC participant. It is fully dependent upon her willingness to participate in the nutrition education opportunities offered by the local agency.

To assess factors that may affect the likelihood of receiving a second contact, a multiple regression model was run including a dummy variable to indicate whether a respondent had received a second *prenatal* nutrition education contact. The model included site indicators; key demographic characteristics, including age, race, marital status, education, employment status, household composition, receipt of cash assistance or food stamps, and poverty level; baseline measures of nutrition knowledge, attitudes and behaviors; and indicators of women's satisfaction with WIC nutrition education (see Chapter 5). The model was run on the pooled sample as well as by site. The use of separate models for each site did not substantially alter the pattern of results, although, because sample sizes were smaller, few coefficients were statistically significant. Findings from the pooled analysis are summarized below:

- Women who had previously been pregnant but not enrolled in WIC were significantly *less likely* to receive a second prenatal contact ($p < 0.05$).
- Women who enrolled in their third trimester were *less likely* to receive a second prenatal contact ($p < .001$).
- Previous WIC participants were significantly *more likely* to receive a second prenatal contact ($p < 0.05$).
- Other demographic and household characteristics were *not* significantly related to receipt of a second prenatal contact.
- Women with higher overall nutrition knowledge scores at baseline were *more likely* to receive a second contact ($p < 0.10$).
- Other baseline nutrition knowledge and attitude measures were *not* significantly associated with receipt of a second prenatal contact.
- Women who reported regular use of prenatal vitamins at baseline were *more likely* to receive a second prenatal contact ($p < 0.01$).
- Women who smoked were *less likely* to receive a second prenatal contact ($p < 0.05$).
- Other behaviors relating to diet, use of alcohol, and use of over-the-counter drugs were *not* significantly associated with receipt of a second prenatal contact.
- Women who were planning to breastfeed for six months or more were significantly *more likely* to receive a second prenatal contact ($p < 0.05$).
- Satisfaction with WIC nutrition education was *not* significantly related to receipt of a second prenatal contact.
- Women in the two Mountain Plains sites were *more likely* to receive a second prenatal contact than women in other sites ($p < .001$).

These data suggest that the women most likely to return for a second prenatal nutrition education contact are those who already have higher levels of nutrition knowledge and, to some extent, already exhibit desirable health behaviors (e.g., take prenatal vitamins more frequently, do not use cigarettes, and plan to breastfeed for at least six months). Conversely, women who are theoretically most in need of services are less likely to return for a second prenatal contact (e.g., women with lower levels of nutrition knowledge, women who enrolled in their third trimester, and women who had previously been pregnant but not enrolled in WIC).



Chapter 4

Changes in Participants' Knowledge, Attitudes, and Behaviors Over Time

This chapter presents information on changes over time in participants' knowledge, attitudes, and behaviors. As described in Chapter 1, the initial analysis plan for this study called for an exploratory impact analysis in which outcomes for participants in sites providing higher-intensity nutrition education would be compared to outcomes for participants in sites providing lower-intensity nutrition education. The hypothesis assumed that, if WIC nutrition education was effective, higher-intensity sites would show more positive change (e.g., greater gains in nutrition knowledge) than lower-intensity sites. This analysis was attempted but was ultimately abandoned because some of the higher-versus-lower-intensity contrasts expected at the time sites were selected were not observed in actual practice. The resulting decrease in site-level contrasts made it impossible to interpret between-site differences observed in the analysis.

The alternative analysis presented in this chapter uses simple *t*-tests to test the significance of change over time (baseline to prenatal survey and baseline to postpartum survey) in each site. In the absence of a control group, significant changes noted in these analyses can not necessarily be ascribed to the WIC Program. However, the extent to which the pattern of change conforms with expectations (based on-site observations and participant self-reports of information and advice provided by WIC staff) increases the likelihood that WIC nutrition education played at least some role in precipitating the change.

In addition to analyses conducted for the full sample, separate analyses were conducted to examine change over time among specific population subgroups: women classified as high-risk; early enrollers (first trimester); first-time mothers; teenagers; and, for selected outcomes, women with low baseline knowledge scores and women who planned, at baseline, to bottle feed exclusively.

Data Sources and Variables

The following groups of outcome variables were included in the analysis:

- nutrition knowledge
- nutrition-related attitudes and perceptions
- nutrition-related behaviors
 - use of prenatal vitamins and iron supplements
 - consumption of WIC foods
 - consumption of selected non-WIC foods
 - initiation and duration of breastfeeding
 - infant feeding practices
- other behaviors
 - use of cigarettes
 - use of alcohol
 - use of over-the-counter medications.

All outcomes were measured identically in the baseline, prenatal, and postpartum surveys. Moreover, all analyses included only the subset of women who responded to all three surveys. Hence, differences from one measurement point to the next are not confounded with changes in either the outcome measure or the analytic sample. Sample sizes for each site are shown in Exhibit 4.1.

Exhibit 4.1

Sample Sizes for Analyses Comparing Baseline and Follow-up Measures of Knowledge, Attitudes, and Behaviors

Southeast Site 1	276
Southeast Site 2	303
Mountain Plains Site 1	292
Mountain Plains Site 2	206
Midwest Site 1	180
Midwest Site 2	220

A relatively small number of respondents in each site (minimum of 17 and maximum of 77) was no longer participating in WIC at the time of the postpartum survey. This was true either because respondents did not recertify as postpartum participants or because they ceased postpartum participation prior to the date of the postpartum survey. Preliminary analyses showed that postpartum measures computed with and without these individuals were virtually identical, so a decision was made to retain them in the analysis.

Nutrition Knowledge

Participants' nutrition knowledge was measured by a battery of 19 true/false and multiple-choice questions. The questions, developed by FNS staff, were designed to measure concepts or facts thought to be central to most WIC nutrition education efforts (see Chapter 1).¹ The 19 items were divided into four different categories, each measuring a different aspect of nutrition knowledge: general nutrition knowledge (primarily food sources of nutrients) (6 items), healthy practices during pregnancy (4 items), breastfeeding (4 items), and recommended infant feeding practices (5 items). Survey items are shown in Exhibit 4.2. In the actual survey (Appendix A, items D4 - D7), items were interspersed rather than grouped together by topic area.

¹ The survey actually included 21 items. During analysis, two items were dropped because scores for these items were negatively correlated with total knowledge scores. Excluded items included the true/false statements: "It is not safe to drink even one alcoholic drink while pregnant" and "Breastfeeding mothers have to follow a special diet."

Exhibit 4.2

Items Used to Assess Nutrition Knowledge

General Nutrition Knowledge

What you eat has nothing to do with whether you have anemia or low iron.

Bread is a good source of vitamin C.

Eating many small meals each day is better for your health than eating just one or two large meals.

Choose the food that is the best source of iron.¹

Choose the food that is the best source of calcium.²

Choose the food that is the best source of folic acid.³

Health Practices During Pregnancy

The food a woman eats during pregnancy can affect how healthy her new baby will be.

It is OK for a pregnant woman to take medicine without talking to a doctor as long as it is not a prescription drug.

If a woman is overweight, she should try to lose weight during pregnancy.

A mother who smokes only a few cigarettes a day throughout her pregnancy may harm her developing baby.

Knowledge About Breastfeeding

You should follow a strict schedule for feeding the baby when breastfeeding.

Alcohol, caffeine, and nicotine can pass from your blood into your breast milk and affect your baby.

Breastfeeding for even one week is better for your baby than not breastfeeding at all.

Breastmilk can help protect babies from certain illnesses.

Recommended Infant Feeding Practices

It is OK for babies to drink regular or lowfat milk after the age of 6 months.

It is OK for babies to begin to eat solid foods, including cereal, at two months of age.
This would include cereal in a bottle.

It is OK to lay a baby down with a bottle as long as the bottle has milk or formula in it and not juice or soda.

Giving a baby solid food helps him/her sleep through the night.

A baby should eat many different types of food as soon as possible.

¹Choices presented: broccoli, orange juice, pinto beans, cheese.

²Choices presented: tomatoes, milk, chicken, whole wheat bread.

³Choices presented: spinach, milk, chicken, grapefruit juice.

Overall Nutrition Knowledge Scores

With the exception of Southeast Site 1, participants entered WIC with reasonably high levels of nutrition knowledge (Exhibit 4.3). In most sites, the mean overall knowledge score at baseline was roughly 70 percent, indicating that, on average, newly enrolling WIC participants answered 13 of the 19 knowledge items correctly.

Overall knowledge scores increased significantly in all sites between the baseline and prenatal surveys. Gains persisted through the postpartum survey and in most sites actually increased by a modest amount. The two Southeast sites showed the greatest cumulative improvement in nutrition knowledge, with baseline to postpartum increases of 10 percentage points (equivalent to two additional correct answers). Increases in other sites were more modest, ranging from three to eight percentage points.

Content-Specific Scores

The content areas that showed the greatest improvement were knowledge related to breastfeeding and knowledge related to recommended infant feeding practices (Exhibits 4.4 and 4.5, respectively). The specific concepts that showed the greatest improvement, across all sites, were the health benefits of breastmilk (two items), the inappropriateness of lowfat milk for infants, and the need to control the introduction of new foods to infants.

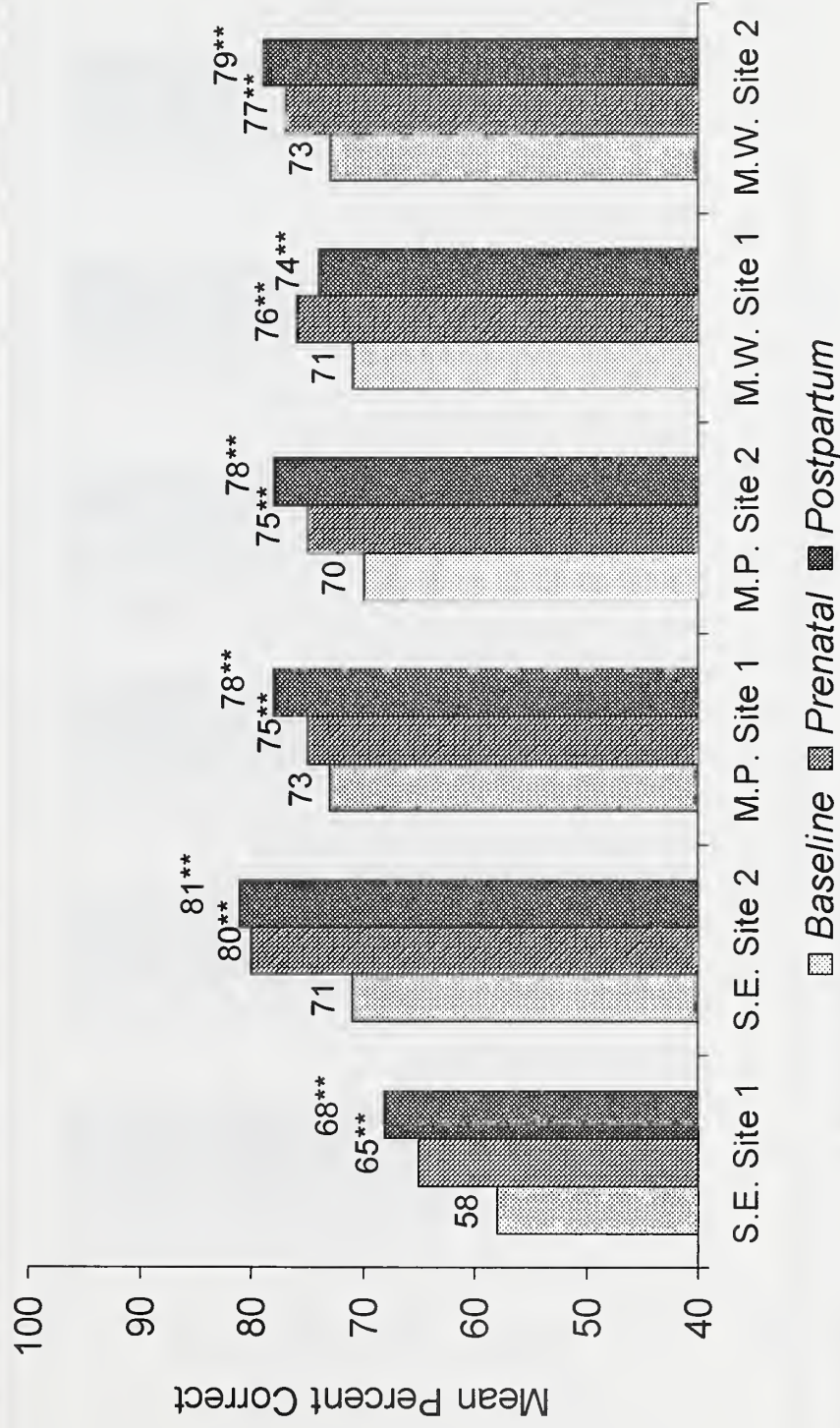
Mean scores in the other two content areas (general nutrition knowledge and healthy practices during pregnancy) also improved, however, changes were less substantial and did not always reach statistical significance. Participants' general nutrition knowledge at baseline (primarily food sources of nutrients) was relatively modest, as were improvements over time (Exhibit 4.6). The only item in this group that showed an appreciable improvement, across all sites, was the one about food sources of folic acid. Participants' baseline knowledge about healthy practices during pregnancy was quite high and, consequently, showed less improvement over time than the other nutrition knowledge measures (Exhibit 4.7).

Overall, the pattern of change seen in these data is consistent with the notion that WIC nutrition education is effective in communicating key nutrition concepts to program participants. The two content areas in which gains were most substantial (breastfeeding and recommended infant feeding practices) were those in which women showed lower levels of baseline knowledge *and* which on-site observations and participant self-reports showed to be well covered in WIC nutrition education contacts.

Moreover, the area in which knowledge gain was most limited (general nutrition knowledge/food sources of nutrients) was not covered as fully in WIC nutrition education contacts. The survey items queried knowledge about specific food sources of nutrients, but WIC nutrition education tended to focus on more applied information, e.g., the fact that it is important to consume four servings of milk per day, without necessarily explaining that milk is a good source of calcium.

Exhibit 4.3

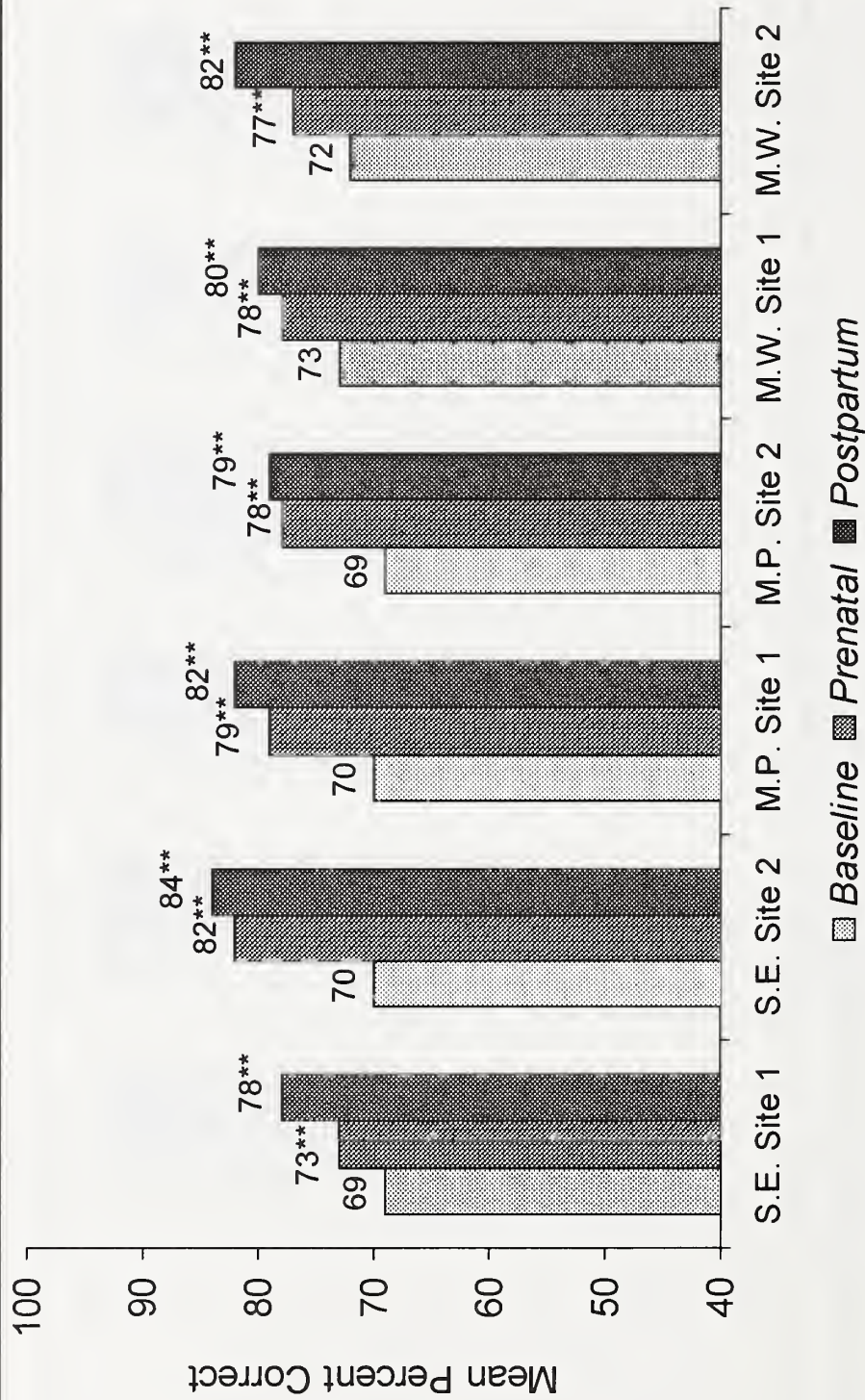
Overall Nutrition Knowledge Scores



**Change from baseline is statistically significant at the .01 level.

Exhibit 4.4

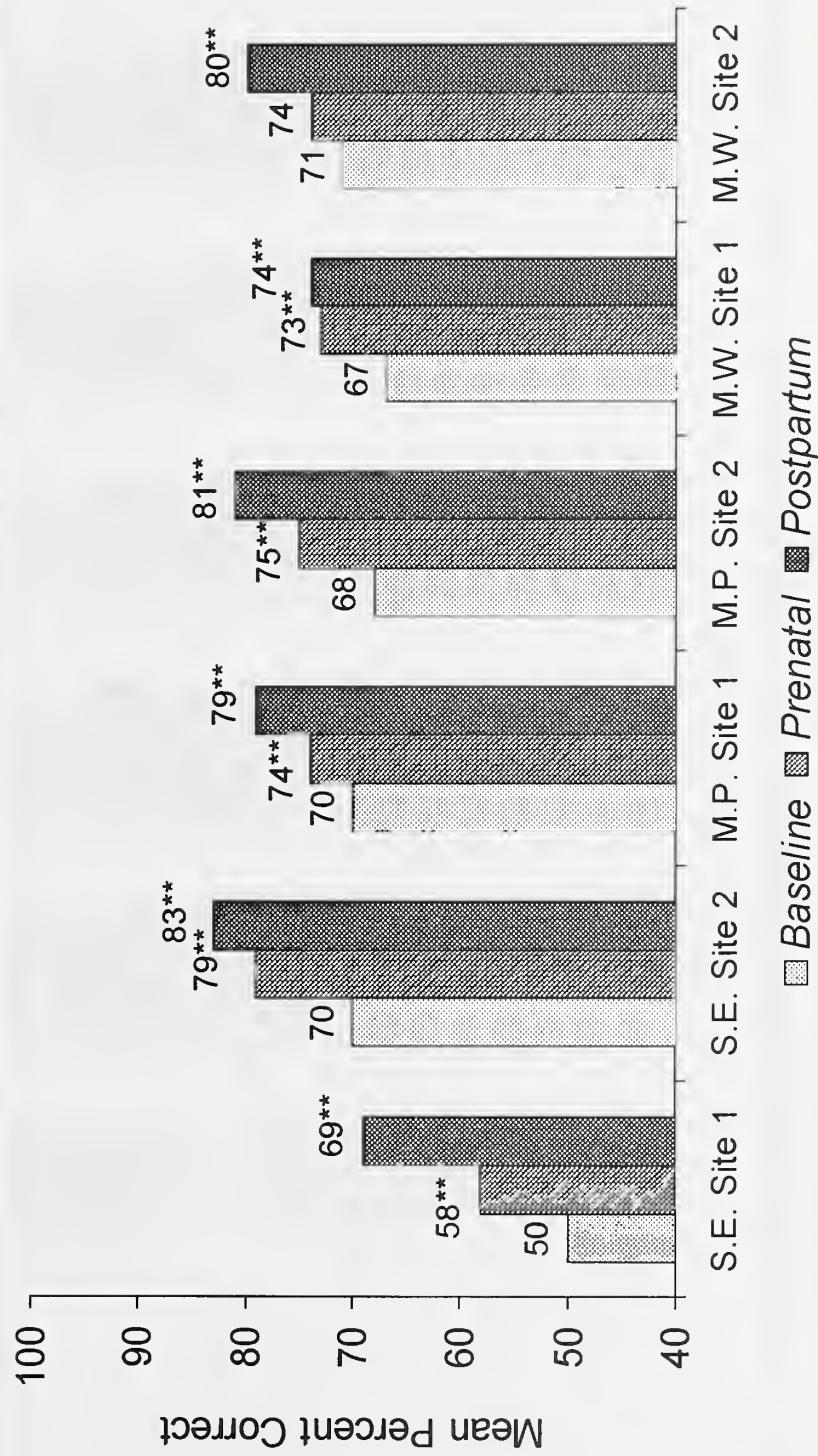
Knowledge About Breastfeeding



**Change from baseline is statistically significant at the .01 level.

Exhibit 4.5

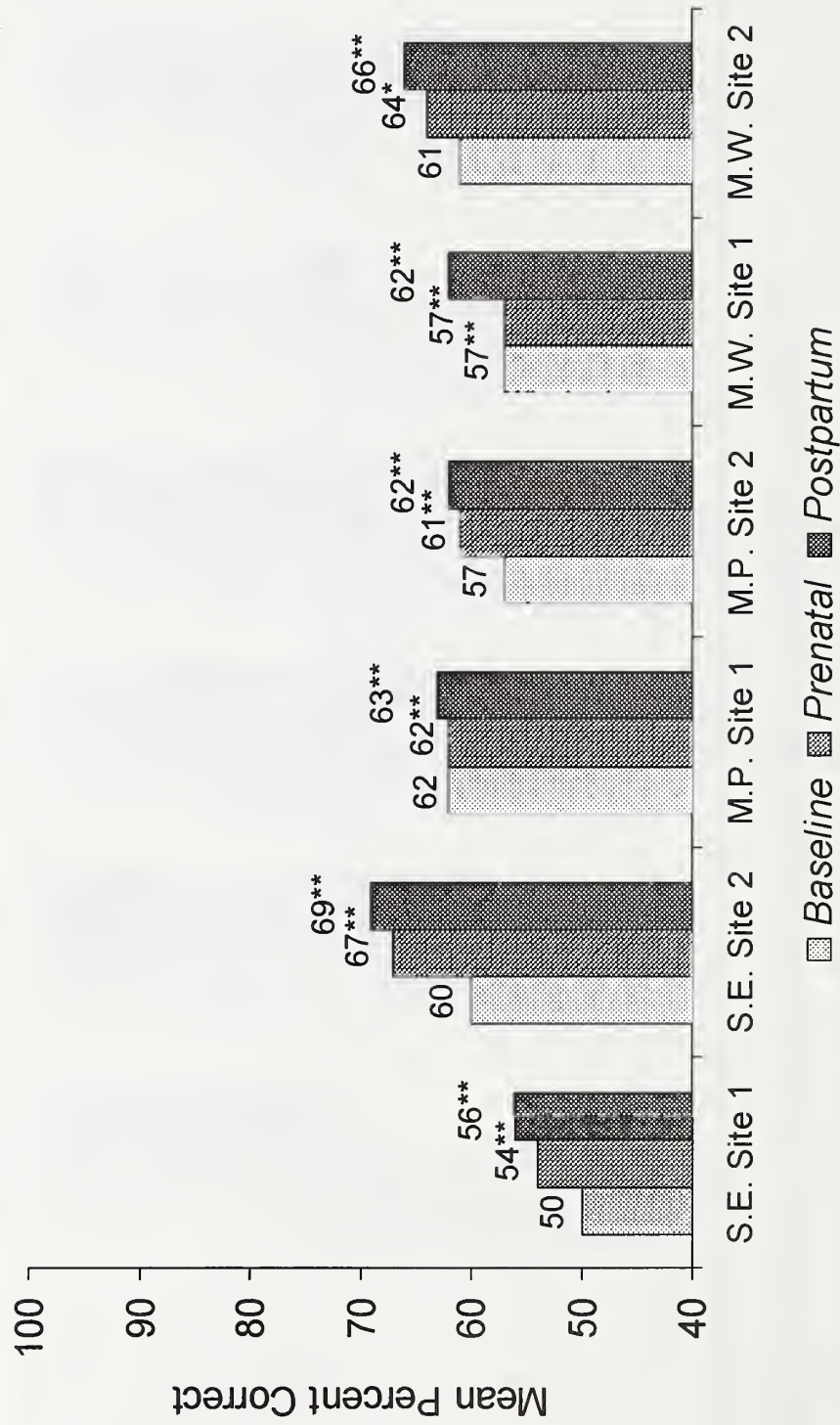
Knowledge About Recommended Infant Feeding Practices



**Change from baseline is statistically significant at the .01 level.

Exhibit 4.6

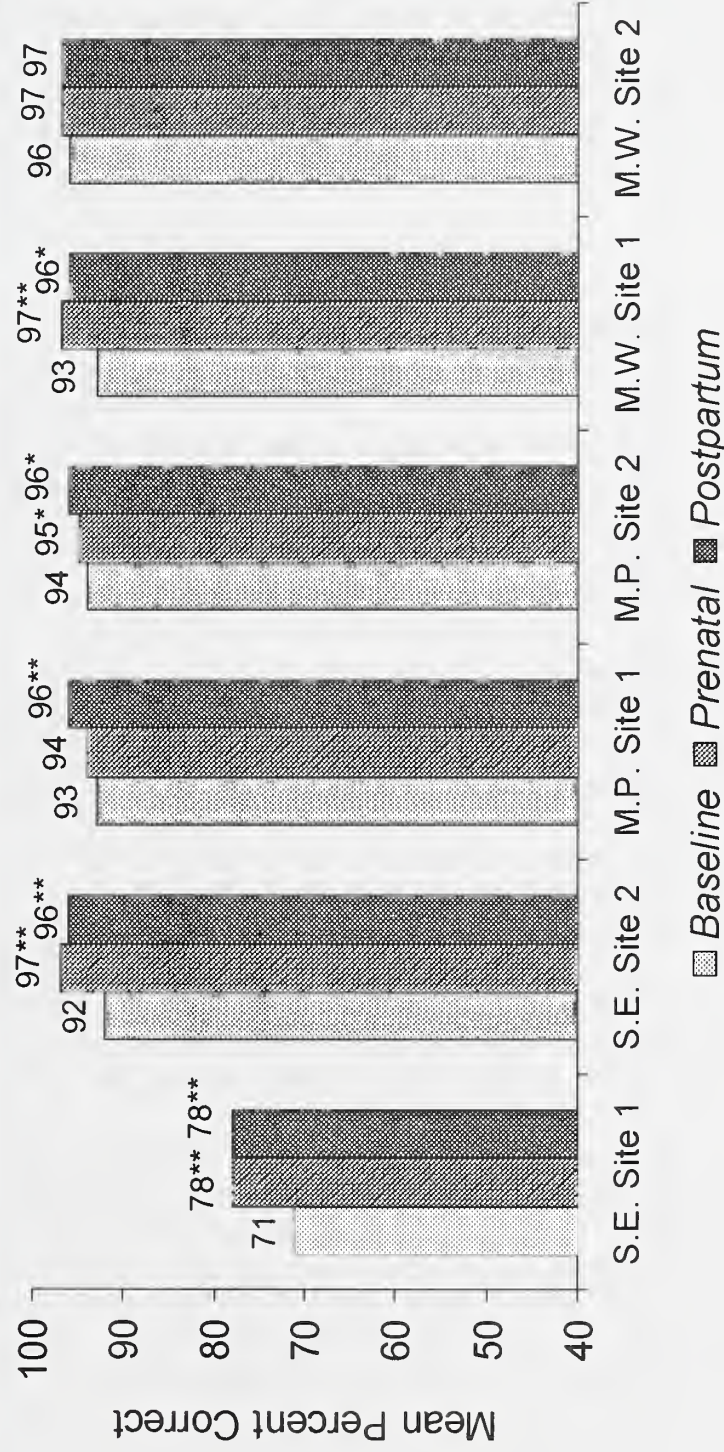
General Nutrition Knowledge



**Change from baseline is statistically significant at the .01 level.

Exhibit 4.7

Knowledge About Healthy Practices During Pregnancy



*Change from baseline is statistically significant at the .05 level.

**Change from baseline is statistically significant at the .01 level.

Nutrition Knowledge Scores Among Previous WIC Participants

Baseline nutrition knowledge scores for women who participated in WIC during a previous pregnancy were compared to scores for women with no prior WIC participation. In five of the six study sites, women who participated in WIC during a previous pregnancy had significantly higher baseline knowledge scores than women with no prior WIC experience (Exhibit 4.8). As the exhibit shows, these differences were largely attributable to differences in scores for breastfeeding knowledge (three sites) and knowledge about recommended infant feeding practices (five sites) — the two content areas that showed the most substantial gain in this study. This finding suggests that at least some of the gains in nutrition knowledge described in the preceding section may be attributable to WIC nutrition education.

Nutrition-related Attitudes and Perceptions

Five measures of attitudes and perceptions were examined: attitude about healthy eating; perceived self-efficacy; perception about overall health status; perception about personal eating habits; and infant feeding preference. Findings for all of these measures are summarized in Exhibit 4.9. Each is discussed, in turn, below. With the exception of the measure of infant feeding preference, significant differences described below are associated with very small differences in mean values— less than one-tenth of a point in many cases. The practical significance of these small differences is unclear, so results should be interpreted with caution.

Attitude About Healthy Eating

Attitude about healthy eating was measured by a battery of seven items pertaining to the importance of a healthy diet and to personal responsibility for the quality of food intake.² Statements were read to respondents as declarative sentences, for example, “If I take a vitamin pill in the morning, I don’t have to worry about what I eat.” Respondents indicated their level of agreement with each statement as either strongly agree, agree, disagree, or strongly disagree. Responses were scored on a four-point scale, with a higher score reflecting a more positive attitude. Responses for the seven individual items were then averaged to compute an overall score for each sample member.

As shown in Exhibit 4.9, women in the study sample had fairly positive attitudes about healthy eating at the time of WIC enrollment (baseline mean of 2.8 - 3.1 on a 4-point scale). In all six sites, the mean score either remained the same or decreased slightly between baseline and prenatal surveys.

By the time of the postpartum survey, mean scores in all sites had decreased slightly from baseline levels. In all cases, baseline-to-postpartum differences were statistically significant. While the magnitude of the differences is quite small, it is interesting to note the consistent decline in attitude toward healthy eating in the postpartum period. As discussed later in this chapter, study participants showed some improvements in desired eating behaviors during the prenatal period, but seemed to revert to pre-pregnancy habits after their babies were born. The decrease in attitude toward healthy eating during the postpartum period is consistent with a diminished focus on recommended eating patterns.

2 Survey items used to construct this attitude measure may be found in section E4 of the prenatal survey (Appendix A). Note that two of the items shown were *not* included in computing the composite “attitude about healthful eating” measure. It was decided that these items (“Sometimes I eat foods that I like but I know they aren’t good for me” and “Sometimes I eat what everybody else is eating even if I know it is not good for me”) measure behavior rather than attitude.

Exhibit 4.8

Mean Baseline Knowledge Scores by Prior WIC Participation

	SOUTHEAST						MOUNTAIN PLAINS						MIDWEST					
	Site 1		Site 2		Site 1		Site 2		Site 1		Site 2		Site 1		Site 2		Site 1	
	Prior WIC Participation		Prior WIC Participation		Prior WIC Participation		Prior WIC Participation		Prior WIC Participation		Prior WIC Participation		Prior WIC Participation		Prior WIC Participation		Prior WIC Participation	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Knowledge Score	(n = 184)	(n = 92)	(n = 183)	(n = 120)	(n = 211)	(n = 83)	(n = 109)	(n = 97)	(n = 106)	(n = 74)	(n = 145)	(n = 72)						
Overall score	56.5	61.9**	69.3	74.7**	71.9	74.1	67.2	73.7**	69.1	73.2*	71.5	76.3**						
General nutrition knowledge	49.0	52.2	59.3	61.5	62.5	62.4	55.4	58.9	58.2	56.3	60.0	63.2						
Healthy practices during pregnancy	71.2	70.4	92.1	92.1	93.8	92.2	93.8	94.6	92.5	94.6	94.8	96.9						
Breastfeeding	68.5	69.0	67.2	73.8*	68.8	72.9	64.7	72.9*	68.6	79.4**	70.3	74.3						
Recommended infant feeding practices	44.1	61.1**	64.6	77.5**	68.0	74.7*	62.2	75.5**	64.0	71.4	67.6	77.2**						

* Difference between baseline knowledge scores for women with and without previous WIC participation is statistically significant at the .05 level.

** Difference between baseline knowledge scores for women with and without previous WIC participation is statistically significant at the .01 level.

Exhibit 4.9

Nutrition Attitude Measures: Mean Scores

Site/Survey	Attitude About Healthy Eating ¹	Perceived Self-Efficacy ²	Perceived Health Status ³	Perceived Healthfulness of Eating Habits ⁴	Infant Feeding Preference Score
Southeast Site 1					
Baseline	2.8	3.0	2.9	2.9	27.2
Prenatal Survey	2.7	2.7**	3.1**	3.2**	27.1
Postpartum Survey	2.7**	2.6**	3.0	3.2**	N/A
Southeast Site 2					
Baseline	3.1	3.1	3.2	2.9	22.3
Prenatal Survey	3.1	3.1	3.5**	3.2**	31.3**
Postpartum Survey	3.0**	3.0**	3.3*	2.9	N/A
Mountain Plains Site 1					
Baseline	3.1	3.2	3.2	2.9	20.4
Prenatal Survey	3.0	3.1	3.5**	3.1**	25.7**
Postpartum Survey	3.0**	3.0**	3.2	2.9	N/A
Mountain Plains Site 2					
Baseline	3.1	3.2	3.2	3.0	15.6
Prenatal Survey	3.1	3.3*	3.6**	3.2**	26.5**
Postpartum Survey	3.0*	3.2	3.3*	2.9	N/A
Midwest Site 1					
Baseline	3.1	3.1	3.1	3.0	16.4
Prenatal Survey	3.0	3.1	3.5**	3.1	16.4
Postpartum Survey	3.0**	2.8**	3.4**	2.9	N/A
Midwest Site 2					
Baseline	3.1	3.0	3.1	2.9	12.1
Prenatal Survey	3.0*	3.0	3.4**	3.1**	17.0*
Postpartum Survey	3.0**	2.8**	3.2*	2.9	N/A

N/A = Not measured in postpartum survey.

¹Mean score on a 4-point scale (1-4), with a higher score indicating a more positive attitude.

²Mean score on a 5-point scale (1-5), with a higher score indicating a greater degree of self-efficacy.

³Mean score on a 5-point scale (1-5), with a higher score indicating a more positive perception of personal overall health status.

⁴Mean score on a 4-point scale (1-4), with a higher score indicating a more positive perception of the healthfulness of personal eating habits.

* Change from baseline is statistically significant at the .05 level.

** Change from baseline is statistically significant at the .01 level.

Perceived Self-Efficacy

A number of factors may make it difficult to eat as healthfully as one would like. For example, many people find it difficult to eat well when they have to eat out, when they are bored or stressed, or, for pregnant women, when they are dealing with strong food cravings. The level of confidence a person has in her ability to deal successfully with these challenging situations is known as self-efficacy. Nutrition education interventions can improve levels of self-efficacy by helping individuals pinpoint specific situations that may impede healthful eating and identify strategies for dealing with these situations when they arise.

Sample members were presented with eight potentially difficult situations and asked to rate their ability to eat healthfully in each scenario. Respondents were asked "Are you able to eat healthy when...."

- you are eating out;
- there is no time to plan/prepare meals;
- you are feeling stressed;
- you are feeling bored;
- you haven't eaten all day and are starving;
- someone else is preparing your meals;
- there are a lot of non-nutritious foods in the house; or when
- you have strong food cravings.

Five responses were possible: definitely yes, probably yes, maybe, probably no, and definitely no. These responses were placed on a five-point scale, with increasing scores indicating higher levels of self-efficacy (i.e., 1=definitely no and 5=definitely yes). Responses for the eight individual items were averaged to compute an overall self-efficacy score for each respondent.

Mean self-efficacy scores, like the measure of attitude toward healthy eating, showed virtually no change during the prenatal period but were significantly lower (in comparison to baseline scores) at the time of the postpartum survey ($p < .01$) (Exhibit 4.9). Mountain Plains Site 2 was an exception. Here, the mean score increased slightly between the baseline and prenatal surveys ($p < .05$), but fell back to the baseline level by the time of the postpartum survey.

Examination of the data for individual items indicated that the decline in overall self-efficacy scores was attributable to a general decrease in scores for all items (i.e., an increase in the number of "definitely no" and "probably no" responses), rather than a marked change in scores for one or two items. The two situations for which respondents consistently reported the lowest levels of self-efficacy were "[when] there are a lot of non-nutritious foods in the house" and "[when] you are feeling stressed."

Perceptions about Personal Health Status and Eating Habits

Respondents rated their overall health status as being excellent, very good, good, fair, or poor. Personal eating habits were rated as very healthy, somewhat healthy, somewhat unhealthy, or very unhealthy. Responses were scored using five-point and four-point scales, respectively, with higher scores assigned to more favorable perceptions.

As shown in Exhibit 4.9, mean scores for overall health status increased between baseline and prenatal surveys in all six sites ($p < .01$). Postpartum scores were lower than prenatal scores, but were still significantly higher than baseline scores in four of the six sites. A similar pattern was noted for baseline to prenatal changes in perceptions about personal eating habits, however, postpartum scores for this measure remained elevated only in Southeast Site 1.

This pattern suggests that, overall, women felt better about their health status and the healthfulness of their eating habits while they were pregnant. Self-assessments declined somewhat after pregnancy and, in the case of perceptions about eating habits, essentially returned to baseline levels.

Infant Feeding Preference

The decision to initiate breastfeeding, one of the major outcomes of interest for WIC nutrition educators, is influenced by a wide variety of factors. According to the *theory of reasoned action* (Fishbein, M. and Ajzen, I., 1975) which has been used as the conceptual framework for several studies of breastfeeding decisions (Gielen, A.C., et al., 1992; Manstead, A.S., et al., 1983; Matheny, R.J., et al., 1987), a person's intention to perform a particular behavior is determined by a personal attitude factor as well as a social or "normative" factor, i.e., how others feel about the behavior.

In order to understand women's attitudes toward breastfeeding, it is necessary to understand underlying perceptions about the consequences, i.e., the advantages and disadvantages, of breastfeeding (behavioral beliefs) as well as the relative importance attached to each potential consequence (evaluation factors). Respondents were asked to react to 16 behavioral belief statements about breastfeeding and bottle feeding (e.g., "Breastfeeding is embarrassing for the mother," and "Bottle feeding provides complete nourishment for the baby") using a six-point scale that ranged from strongly agree to strongly disagree.³

Respondents also indicated the level of importance they placed on each of 14 evaluation factors, using a different six point scale that ranged from extremely important to not at all important. Evaluation factors were posed as questions, e.g., "How important is it that the feeding method you choose makes it easy for you to go to work or school?"

Responses for behavioral beliefs and evaluation factors were combined to create an infant feeding preference score. The higher the score, the greater the preference for breastfeeding. Baseline and prenatal means for the infant feeding preference score are summarized in Exhibit 4.9. (Infant feeding preference items were not included in the postpartum survey). In four of the six study sites, mean scores increased between the baseline and prenatal surveys, indicating that women's openness to breastfeeding increased over the course of their prenatal WIC participation. As a point of reference, the mean score for women who planned to breastfeed exclusively (at baseline) was 45.5; women who planned to combine breastfeeding with bottle feeding scored, on average, 28.2; and women who planned to bottle feed exclusively had a mean score of -5.1. The increase was most dramatic in Mountain Plains Site 2, which had the second lowest score at baseline. The mean increased from 15.6 to 26.5, an increase of approximately 70 percent.

3 Behavioral beliefs and evaluation factors may be found in sections G7 and G8 of the sample survey (Appendix A) or in Chapter 6. The methodology used in computing infant feeding preference scores is described in detail in Chapter 6.

Nutrition-related Behaviors

Five different groups of nutrition-related behaviors were examined: use of prenatal vitamins and iron supplements; consumption of WIC foods; consumption of non-WIC foods; initiation and duration of breastfeeding; and infant feeding practices (other than breastfeeding). Findings for each of these outcomes are summarized in the following sections.

Use of Prenatal Vitamins and Iron Supplements

In both the baseline and prenatal surveys, women were asked to report how many times per week they were taking prenatal vitamins and prenatal iron supplements. At baseline, women were taking prenatal vitamins an average of 4.4 to 6.3 times per week (Exhibit 4.10). By the time of the prenatal survey, the mean frequency increased to 5.7 to 6.6 times per week. This increase was statistically significant in five of the six study sites.

Use of prenatal iron supplements also increased over time in all six sites (Exhibit 4.11). The range across sites moved from 0.7 - 5.6 times per week to 1.5 - 6.3 times per week. The frequency of iron supplement use at baseline was notably higher in Southeast Site 1 than in any of the other sites. Local agency staff explained that a majority of the immigrant women enrolled in this site were anemic. Thus, prescriptions for iron supplements were fairly routine. Moreover, women were reportedly more likely to take iron supplements than to take regular prenatal vitamins. WIC staff suggested that women generally understood the need to take the iron pill to "strengthen their blood," but were less accepting of the need for the general prenatal vitamin.

Although the importance of prenatal supplements was a consistent theme in prenatal WIC nutrition education efforts in all study sites (see Chapter 2), a portion of the increase in use of prenatal vitamins and iron supplements over time was probably attributable to an increase in the proportion of women enrolled in prenatal care. (The percentage of women not enrolled in prenatal care at baseline averaged 21 percent and ranged from four to 43 percent). No attempt was made to partition this effect, however, because movement into prenatal care may, in itself, be related to WIC nutrition education. The importance of prenatal care was a common theme in WIC nutrition education contacts in all study sites except the two Southeast sites.

Reported Consumption of WIC Foods

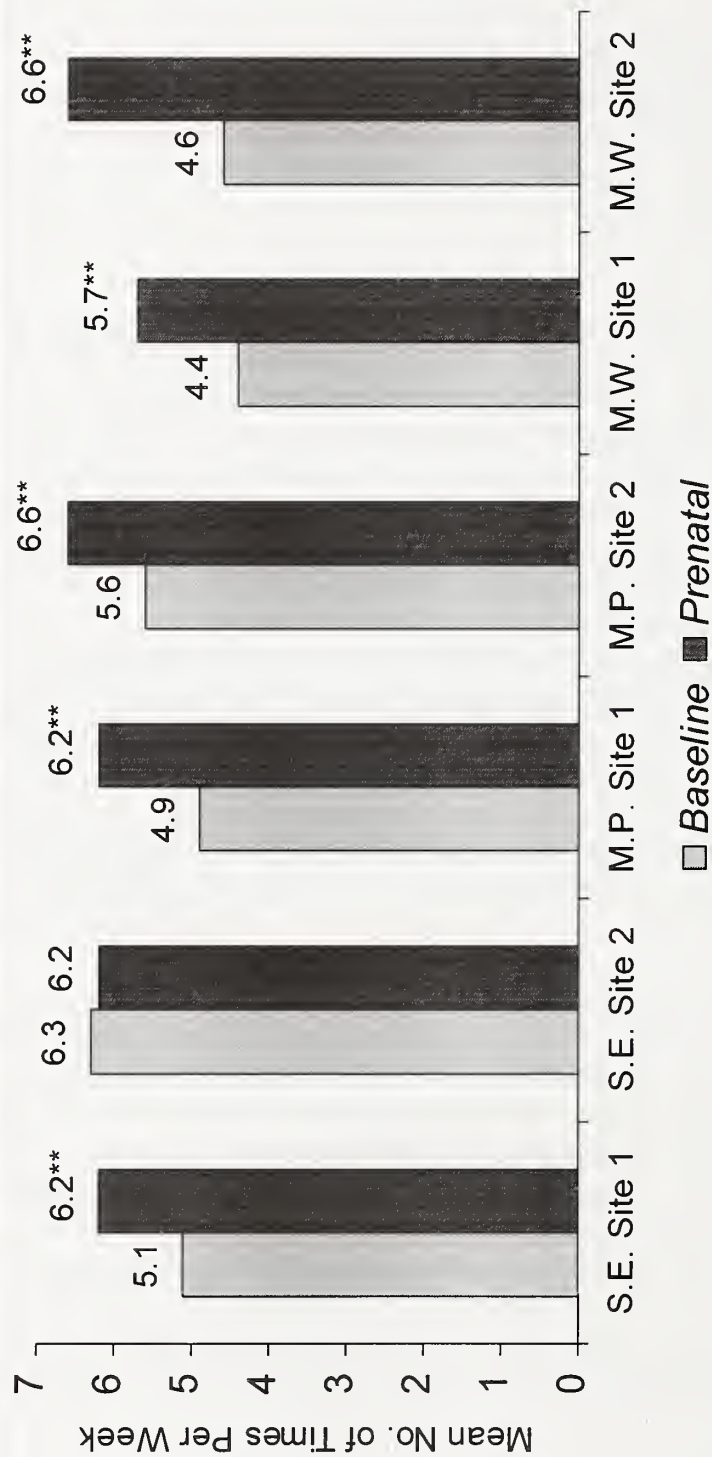
Women were asked to report the frequency with which they consumed specific foods included in WIC food packages: milk; cheese; eggs; 100% fruit juice; WIC cereals (a list of allowable WIC cereals was read to respondents); peanut butter; and dried beans, peas, and lentils.⁴ Response options ranged from never to three or more times per day. Responses were transformed to "times per day" using, as necessary, mid-points of specified ranges (e.g., 1-2 times per week was considered equivalent to 1.5 times per week or 0.2 times per day). During analysis, responses for peanut butter and dried beans, peas, and lentils were combined because reported frequencies for each individual food were very low.

Reported daily consumption of milk, 100% fruit juice, and WIC cereals increased significantly in all six study sites between the baseline and prenatal surveys (Exhibit 4.12). Reported consumption of

⁴ As noted in Chapter 1, the measures of food consumption used in this study were very general (see Section C1 in prenatal survey (Appendix A)) because the length of the survey precluded use of a more elaborate measure.

Exhibit 4.10

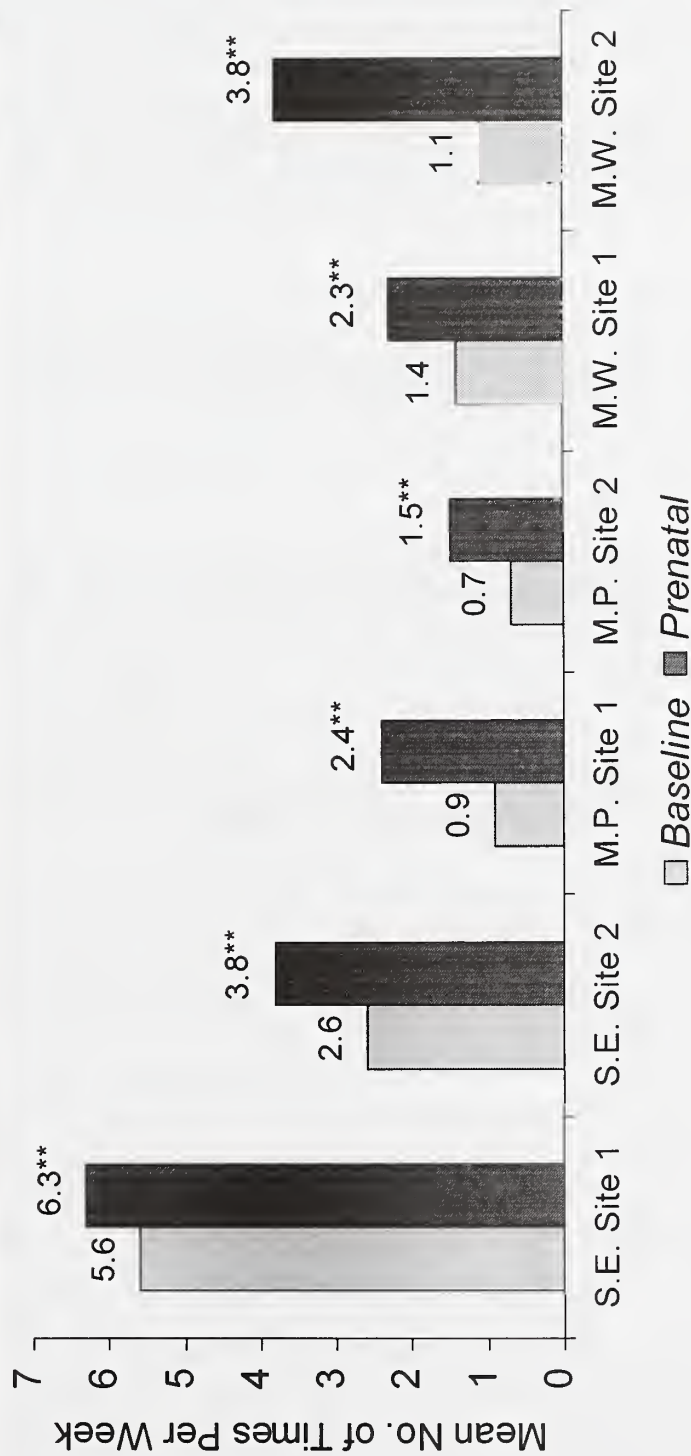
Use of Prenatal Vitamins



**Change from baseline is statistically significant at the .01 level.

Exhibit 4.11

Use of Prenatal Iron Supplements



**Change from baseline is statistically significant at the .01 level.

Exhibit 4.12
Reported Daily Consumption of WIC Foods

Site/Survey	Mean Number of Times Consumed Per Day				
	Milk	100% Fruit Juice	WIC Cereals	Cheese	Peanut Butter, Beans, Peas, and Lentils
Southeast Site 1					
Baseline	1.3	1.2	0.5	0.6	0.8
Prenatal Survey	2.1**	1.6**	0.8**	1.1**	1.0**
Postpartum Survey	1.5**	1.2	0.7**	0.9**	N/A
Southeast Site 2					
Baseline	1.2	1.0	0.6	0.7	0.5
Prenatal Survey	1.7**	1.2*	0.8**	0.9**	0.6*
Postpartum Survey	1.0**	1.0	0.6	0.8	N/A
Mountain Plains Site 1					
Baseline	1.6	1.1	0.6	0.8	0.6
Prenatal Survey	2.1**	1.4**	0.8**	1.0**	0.8**
Postpartum Survey	1.4**	0.9*	0.6	0.9	N/A
Mountain Plains Site 2					
Baseline	1.5	1.1	0.6	0.9	0.6
Prenatal Survey	2.3**	1.5**	1.0**	1.2**	0.9**
Postpartum Survey	1.6	1.2	0.7**	1.1**	N/A
Midwest Site 1					
Baseline	1.6	1.2	0.6	0.8	0.7
Prenatal Survey	2.1**	1.5**	1.0**	0.8	0.6
Postpartum Survey	1.4*	1.2	0.8**	0.9	N/A
Midwest Site 2					
Baseline	1.7	1.0	0.5	0.9	0.6
Prenatal Survey	2.2**	1.3**	0.8**	0.9	0.6
Postpartum Survey	1.4**	0.9	0.7**	0.8	N/A

cheese, as well as peanut butter, dried beans, peas, and lentils, increased in four sites. Consumption of eggs increased in three sites.

In the postpartum survey, the increase in reported milk consumption was retained only in Southeast Site 1. In four of the other five sites, daily milk consumption decreased to levels *below* baseline and differences between baseline and postpartum measures were statistically significant. Reported juice consumption also declined between the prenatal and postpartum surveys. In this case, postpartum consumption generally approximated baseline levels, i.e., the difference between baseline and postpartum reports was not significant. The only exception was Mountain Plains Site 1 where reported juice consumption at the time of the postpartum survey was significantly lower than at baseline.

Some of the decline in reported daily intake of milk and juice may be associated with a return to pre-pregnancy eating habits. It is also likely that differences in prenatal and postpartum WIC food packages account for some of these changes. Postpartum women receive less milk and less juice than pregnant women. The change is equivalent to about eight fewer ounces of milk per day and three fewer ounces of juice per day. Although the available data reflect "times consumed per day," rather than "servings per day," the patterns observed in the data are consistent with this level of change.

Postpartum consumption of cheese and eggs varied across sites. In two of the four sites where reported cheese consumption increased between the baseline and prenatal surveys, postpartum women continued to show an increased use of cheese (in comparison to baseline). In the other two sites, reported use of cheese returned to baseline levels. Increased use of eggs continued into the postpartum period in two of the three sites where an increase was noted during the prenatal period, and decreased to baseline levels in the remaining site. Change in the availability of WIC foods is not a likely contributor to differences noted over time in reported consumption of these foods because basic prenatal and postpartum food packages includes equivalent amounts of cheese and eggs.

The WIC food for which increased consumption was maintained into the postpartum period most consistently was WIC cereals. Reported postpartum consumption remained significantly higher than baseline levels in four of the six study sites. Equivalent amounts of WIC cereal are provided in prenatal and postpartum food packages.

Reported Consumption of Non-WIC Foods

In addition to WIC foods, respondents were asked to report usual consumption of selected non-WIC foods including fried foods; sweetened sodas and fruit drinks; fruits; vegetables (other than dried beans, peas and lentils);⁵ cookies, cakes and pastries; candy; and snack foods such as chips, pretzels, and packaged popcorn.⁶ Response options were the same as those reported for WIC foods and

5 After survey instruments were designed, the WIC food package for breastfeeding women was expanded to include canned, fresh, or frozen carrots. Consequently, the postpartum measure of fruit and vegetable intake may actually include, for breastfeeding women, carrots from the WIC food package.

6 Two other non-WIC foods were included in the survey but were dropped during analysis. The first was "non-fried beef, pork, veal, chicken, or fish (excluding tuna fish)." This item was dropped because of concerns that it did not perform well (poorly worded and too many inclusions/exclusions), as well as difficulties in interpreting data. Unlike the other items reported in Exhibits 4.12 and 4.13, an increase or decrease in the frequency of this food group cannot be interpreted, even in a general way, as positive or negative. The second non-WIC food dropped during the analysis was alcoholic beverages. This item was dropped because relevant information was gathered in a separate survey item. (Data reported later in this chapter).

conversion to reported daily intake was handled in the same manner. During analysis, items measuring fruits and vegetables were combined into a single measure and items measuring sweetened sodas and fruit drinks, cookies, cakes, pastries, and candy were collapsed to create a single measure referred to as "sweets."

As Exhibit 4.13 indicates, reported intake of fruits and vegetables increased significantly between the baseline and prenatal surveys in four of the six sites. As noted for WIC foods, however, increases were not maintained through the postpartum period. At the time of the postpartum survey, reported daily consumption of fruits and vegetables in all study sites was equivalent to or significantly less than reported consumption at baseline.

Reported daily consumption of all of the less-nutritious non-WIC foods queried in this study (fried foods, sweets, and snack foods) declined in most study sites between the baseline and prenatal surveys, and most of these changes were statistically significant. Reversion to baseline levels of consumption varied for each food group. In general, reported consumption of snack foods showed the least amount of deterioration over time, i.e., improvements seen in five of the six study sites carried over into the postpartum period.

Initiation and Duration of Breastfeeding

Exhibit 4.14 summarizes women's intentions to breastfeed, as reported in baseline and prenatal surveys, as well as actual breastfeeding behaviors reported in the postpartum survey. At baseline, the percentage of women who indicated an intention to breastfeed, either exclusively or in combination with formula feeding, ranged from 47 to 87 percent.

By the time of the prenatal survey, the proportion of women expressing an intention to breastfeed had increased significantly in both of the Southeast sites and in Mountain Plains Site 2. These increases were essentially transient, however, because the percentage of women who actually followed through on this intention, i.e., the percentage of women who actually initiated breastfeeding (for any amount of time), was not significantly different from the percentage who expressed an intention to breastfeed at baseline. The only site in which this was not true was Midwest Site 2 where the percentage of women who actually initiated breastfeeding was significantly *less* than the percentage who intended to do so at baseline. These data suggest that most women enter the WIC Program with fairly well established plans for feeding their infants.

Intentions regarding breastfeeding duration remained stable over the course of prenatal WIC participation, however, the actual duration of breastfeeding—measured in terms of the percentage of women who breastfed for at least six months as well as the mean length of the breastfeeding period—was significantly less than initially planned. In both the baseline and prenatal surveys, the percentage of women who reported an intention to breastfeed for at least six months was five percent or less in all six sites. The percentage who actually breastfed for six or more months ranged from one to three percent. Similarly, the intended length of breastfeeding ranged from about five to 11 months, compared to an actual duration of two to five months.

Exhibit 4.13

Reported Daily Consumption of Non-WIC Foods

	Fruits and Vegetables ¹	Fried Foods ²	Sweets ³	Snack Foods ⁴
Mean Number of Times Consumed per Day				
Southeast Site 1				
Baseline	1.7	0.5	1.2	0.2
Prenatal Survey	2.1**	0.3**	1.0*	0.1**
Postpartum Survey	1.7	0.4	1.1	0.1**
Southeast Site 2				
Baseline	1.8	0.4	1.9	0.4
Prenatal Survey	1.8	0.4*	1.5**	0.3**
Postpartum Survey	1.6*	0.5	1.8	0.4
Mountain Plains Site 1				
Baseline	1.9	0.4	1.7	0.4
Prenatal Survey	2.1*	0.3**	1.4**	0.3**
Postpartum Survey	1.6**	0.4*	1.8	0.3**
Mountain Plains Site 2				
Baseline	2.1	0.6	1.9	0.5
Prenatal Survey	2.4*	0.6	1.6**	0.4**
Postpartum Survey	2.0	0.7	1.7*	0.4**
Midwest Site 1				
Baseline	1.9	0.6	2.4	0.6
Prenatal Survey	2.1*	0.4**	1.6**	0.4**
Postpartum Survey	1.7	0.4**	2.0*	0.5**
Midwest Site 2				
Baseline	1.9	0.7	2.6	0.6
Prenatal Survey	2.0	0.4**	1.7**	0.3**
Postpartum Survey	1.5**	0.4**	1.7**	0.4**

¹Includes fresh, frozen, and canned fruits and vegetables, excluding dried beans, peas, and lentils.

²Survey item read: "Fried foods such as fried chicken, fish, pork, or french fries."

³Includes cookies, cakes, pastries, and candy of any type.

⁴Survey item read: "Snacks such as chips, pretzels, and packaged popcorn."

* Change from baseline is statistically significant at the .05 level.

** Change from baseline is statistically significant at the .01 level.

Exhibit 4.14

Breastfeeding Intentions and Behaviors

Breastfeeding Intention or Behavior	SOUTHEAST			MOUNTAIN PLAINS			MIDWEST	
	Site 1	Site 2		Site 1	Site 2		Site 1	Site 2
Breastfeed Exclusively or in Combination with Formula Feeding								
Baseline intention	87%	56%		74%	62%		54%	47%
Prenatal intention	91*	63**		76	70**		59	47
Actual behavior	83	58		75	65		57	41*
Breastfeed for Six Months or More								
Baseline intention	5%	3%		5%	4%		3%	3%
Prenatal intention	5	3		5	4*		3	3
Actual behavior	3**	1**		2**	2**		1**	1**
Duration of Breastfeeding (months)								
Baseline intention	11.3	6.9		9.4	8.0		5.6	5.4
Prenatal intention	11.0	7.6		10.3	8.4		6.0	4.8
Actual behavior	5.4**	2.4**		3.6**	2.7**		1.6**	1.8**

* Change from baseline is statistically significant at the .05 level.

** Change from baseline is statistically significant at the .01 level.

Adherence to Recommended Infant Feeding Practices

WIC recommends that *only* breastmilk, iron-fortified formula, and plain (unsweetened) water be offered to infants through 3 months of age. Beginning at 4 months, other foods may be introduced according to the following recommended progression (USDA, 1993):

- 4-6 months: Iron-fortified infant cereals
Infant juices or 100% fruit juice high in vitamin C (*if infant can drink from a cup*)
- 6-8 months: Vegetables and fruits
Infant juices or 100% fruit juice high in vitamin C
Can try meats if extra iron source is needed
- 8-12 months: Meat and other protein-rich foods
Crackers, breads, and other grain products

To assess the extent to which WIC participants in this study adhered to these recommended infant feeding guidelines, postpartum survey respondents were asked whether, by the time of the interview (4-6 months postpartum), they had fed their infant anything other than breastmilk, formula, or plain water. Respondents who answered in the affirmative were then asked to provide information on the age at which a variety of different foods and drinks were offered. Food items included in the inventory read to respondents are shown in Exhibit 4.15.

These data were used to construct several measures of undesirable infant feeding practices. Because preliminary analyses revealed a relatively high occurrence of undesirable feeding practices before 4 months of age, two different sets of measures were created. One assessed inappropriate feeding in very early infancy—before 2 months of age—and one assessed inappropriate feeding before 4 months of age. All of the foods and beverages included in the inventory (Exhibit 4.15) were considered inappropriate if fed before the infant was 4 months of age.

The data indicate that, although most women appear to have followed recommended infant feeding guidelines during the earliest months of life, some women offered their infants inappropriate fluids (primarily sweetened water) or solids (primarily infant cereal) before the age of two months (Exhibit 4.16). The percentage of women who offered inappropriate fluids ranged from a low of five percent to a high of 27 percent. The percentage who offered solid foods ranged from three percent to 18 percent.

The prevalence of undesirable infant feeding practices increased sharply for older infants. More than 40 percent of women in each site offered their babies something other than breastmilk, formula, or plain water before the age of 4 months (Exhibit 4.17). In several sites, two-thirds to three-quarters of women reported this behavior. Use of solids (primarily infant cereal) before 4 months of age was also a common practice, although less common than use of inappropriate fluids (minimum of 39 percent and a maximum of 67 percent).

Finally, roughly one-third of women in all sites except Mountain Plains Site 2 offered their infants something that is considered completely inappropriate for infants of any age, (e.g., fruit drinks, sodas, or desserts), or not appropriate until at least 6 months of age (e.g., fruits or vegetables, meats, and, in some cases, whole eggs or milk).

Exhibit 4.15

Food Items Included in Infant Feeding Inventory

- 100% fruit juice
 - Fruit drinks, including Kool-Aid, Hi-C, punches and sodas
 - Regular or lowfat milk
 - Water with sugar or other sweetener
 - Infant cereals
 - Fruit, including baby food
 - Vegetables, including baby food
 - Beef, pork, chicken or fish, including baby food
 - Baby dinners with meat
 - Noodles or rice, including baby dinners
 - Whole eggs or egg whites
 - Egg yolks
 - Desserts, including baby crackers, puddings, tapioca, custard, ice cream
-

Other Behaviors

In practice, WIC nutrition educators address a broad range of health practices that are not directly related to nutrition, including use of cigarettes and alcohol, and use of over-the-counter medications. This section summarizes changes in these behaviors noted among study participants.

Use of Cigarettes

Many women who smoked cigarettes prior to pregnancy reportedly quit after becoming aware of their pregnancy and before enrolling in WIC (Exhibit 4.18). Nonetheless, in all sites except Southeast Site 1, where very few women smoked even before pregnancy, 20 to 41 percent of women reported using cigarettes at the time of the baseline survey. At the time of the prenatal survey, the prevalence of cigarette use was significantly lower in two of the five sites that had an appreciable number of smokers. There was no significant difference in the remaining two sites.

A majority of women who stopped smoking before or after WIC certification resumed the habit by the time of the postpartum survey. In all six sites, the percentage of women using cigarettes at the time of the postpartum survey was significantly greater than at baseline. Although cigarette use had not returned to pre-pregnancy levels, there was a definite trend in this direction.

Exhibit 4.16

Prevalence of Undesirable Infant Feeding Practices Before Two Months of Age

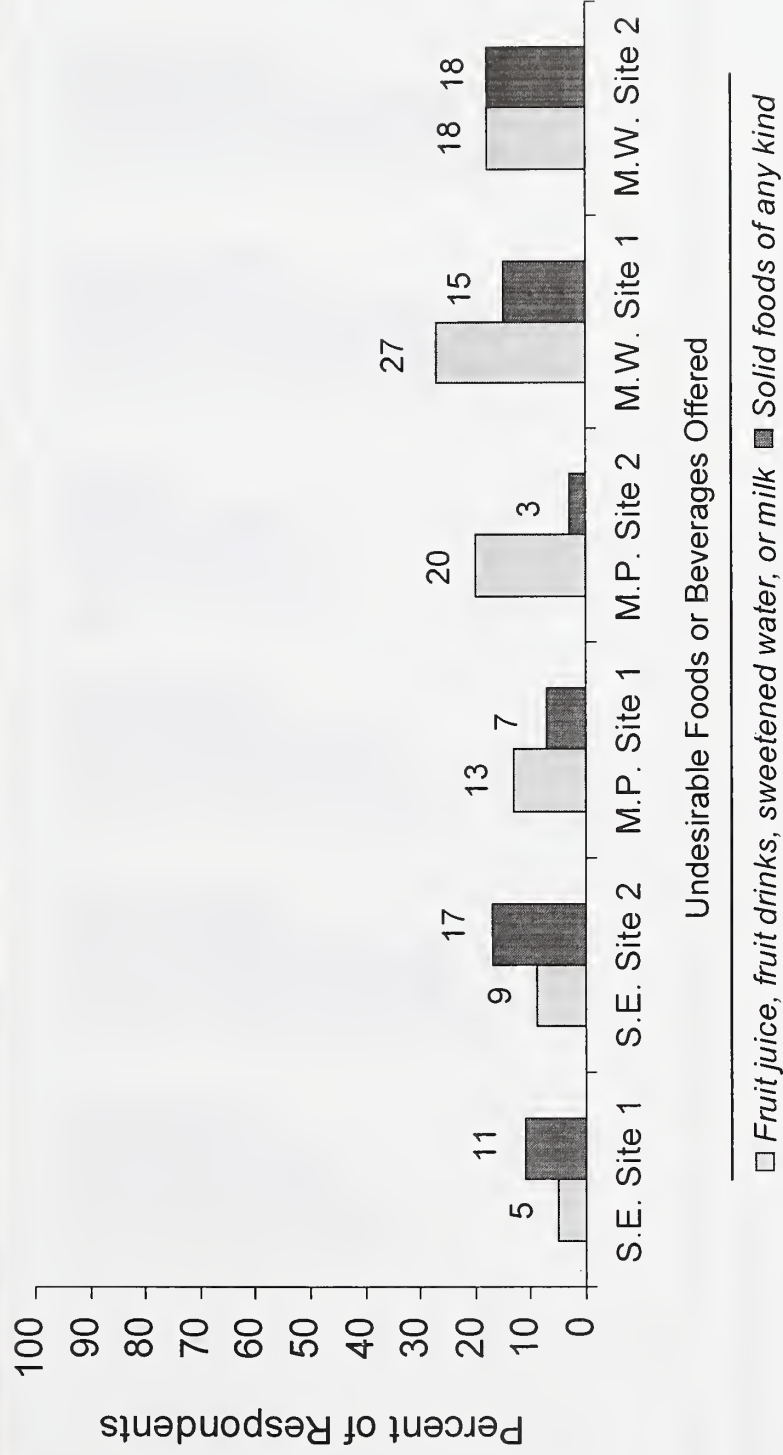
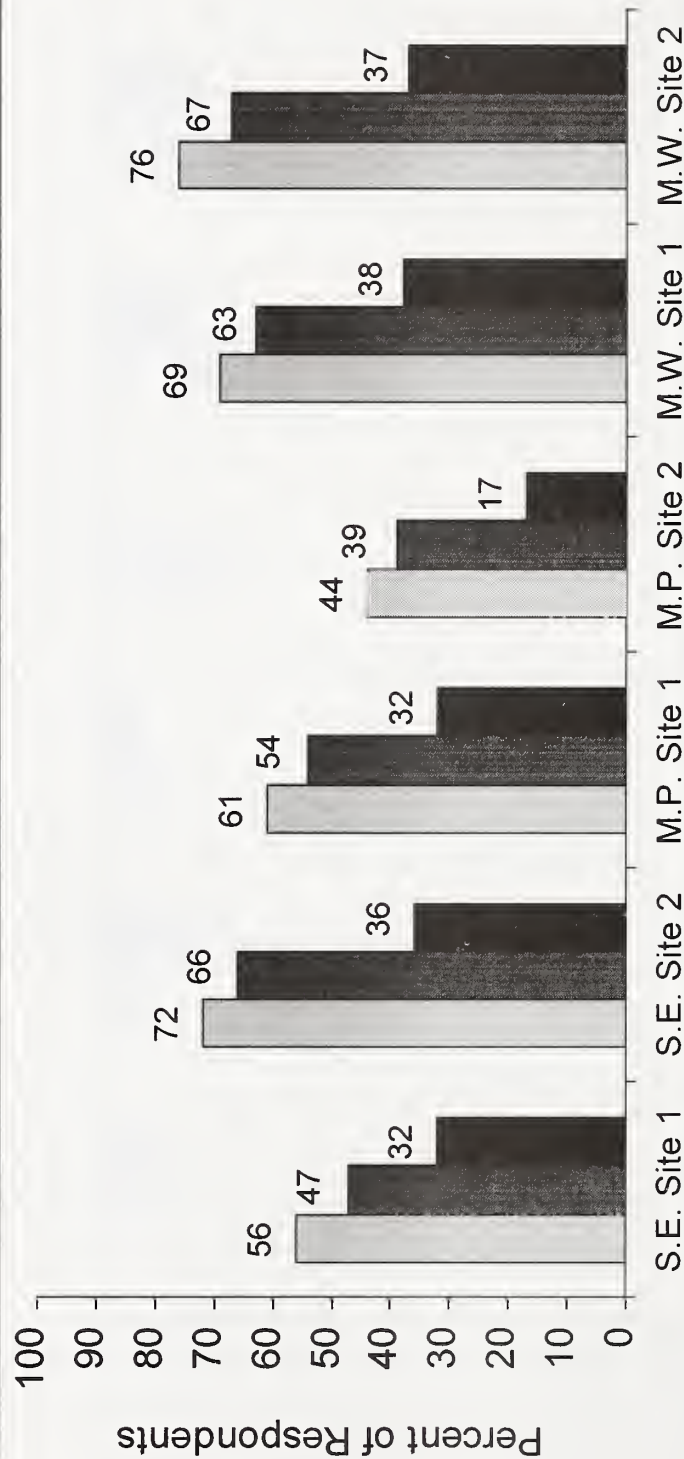


Exhibit 4.17

Prevalence of Undesirable Infant Feeding Practices Before Four Months of Age



Undesirable Foods or Beverages Offered

- Anything other than unsweetened water, breastmilk, or formula
- Solid foods of any kind
- Fruit drinks, milk, or solids other than infant cereal

Self-Reported Use of Cigarettes and Alcohol

	Proportion Smoking Cigarettes	Proportion Consuming any Alcohol
Southeast Site 1		
Pre-pregnancy	3.8%	15.4%
Baseline	0.4	2.5
Prenatal Survey	0.4	3.0
Postpartum Survey	2.6*	7.5**
Southeast Site 2		
Pre-pregnancy	36.0	44.3
Baseline	20.5	7.6
Prenatal Survey	18.2	6.3
Postpartum Survey	26.1**	21.5**
Mountain Plains Site 1		
Pre-pregnancy	49.3	59.6
Baseline	34.0	15.3
Prenatal Survey	28.6**	8.6**
Postpartum Survey	38.4*	34.7**
Mountain Plains Site 2		
Pre-pregnancy	46.0	58.2
Baseline	19.5	5.3
Prenatal Survey	18.9	1.5
Postpartum Survey	30.1**	10.2*
Midwest Site 1		
Pre-pregnancy	50.0	44.9
Baseline	31.9	4.0
Prenatal Survey	25.3**	2.6
Postpartum Survey	39.4**	26.1**
Midwest Site 2		
Pre-pregnancy	52.0	44.6
Baseline	40.5	7.7
Prenatal Survey	37.2	4.1*
Postpartum Survey	45.0*	15.9**

* Change from baseline is statistically significant at the .05 level.

** Change from baseline is statistically significant at the .01 level.

Use of Alcohol

Most women who used alcohol prior to pregnancy reportedly discontinued this practice prior to WIC certification. With the notable exception of Mountain Plains Site 1, fewer than ten percent of women reported use of alcohol at the time of the baseline interview (Exhibit 4.18). Over the course of prenatal WIC participation, use of alcohol decreased further (and significantly) in two sites. In the other three sites, the value of the estimates shifted somewhat, sometimes up and sometimes down, but these differences were not statistically significant.

By the time of the postpartum survey, many women had resumed use of alcohol. In all six sites, the prevalence of reported alcohol consumption during the postpartum period was significantly greater than at baseline, but still substantially lower than prior to pregnancy.

Use of Over-the-counter Medications

In recent years, the WIC Program has targeted use of over-the-counter medications as a topic for nutrition education contacts. Pregnant and breastfeeding women are discouraged from taking any over-the-counter medications without physician approval. In this study, most women came to the WIC Program already adhering to this recommendation. More than 70 percent of women in each site were following this recommendation at baseline (Exhibit 4.19). Nonetheless, adherence to the recommendation increased significantly in all sites between the baseline and prenatal surveys, reaching levels of 82 to 97 percent.

This analysis was not repeated for postpartum survey data because, after pregnancy, the recommendation only applies to women who are breastfeeding. The percentage of women who were still breastfeeding at the time of the postpartum survey was too small to support this analysis.

Changes Among Selected Subgroups

The goal of this analysis was to determine whether certain subgroups of participants showed evidence of greater or lesser change than the general population of pregnant WIC participants. Subgroups included in the analysis were:

- women classified as high-risk at the time of prenatal certification;
- early enrollers, i.e., women who enrolled in WIC during or before the 15th week of gestation (the sample median);
- first-time mothers; and
- teenagers (under the age of 18).

The following four outcomes was examined:

- overall nutrition knowledge score;
- infant feeding preference score;
- use of prenatal vitamin supplements; and
- daily consumption of milk.

Exhibit 4.19**Reported Use of Over-the-Counter Medication**

Site/Survey	Proportion Using OTC Medications Only With Physician Approval
Southeast Site 1	
Baseline	89.1
Prenatal Survey	96.7**
Southeast Site 2	
Baseline	82.1
Prenatal Survey	95.7**
Mountain Plains Site 1	
Baseline	71.1
Prenatal Survey	81.8**
Mountain Plains Site 2	
Baseline	71.2
Prenatal Survey	87.8**
Midwest Site 1	
Baseline	75.0
Prenatal Survey	85.6**
Midwest Site 2	
Baseline	80.9
Prenatal Survey	95.0**

* Change from baseline is statistically significant at the .05 level.

** Change from baseline is statistically significant at the .01 level.

Exhibit 4.20 summarizes results of the subgroup analyses. Every check mark in this exhibit indicates a significant difference ($p < .01$ or $p < .05$) between baseline and prenatal measures. In general, as the exhibit illustrates, baseline to prenatal changes observed in the total population were generally observed in each of the subgroups. There were, however, isolated instances in which one or more subgroups did *not* exhibit a positive change noted in the overall population. This was most often true for first-time mothers and teenagers.

The most interesting finding involves teenagers and milk consumption. In three of the four sites with more than 25 teenagers, the teenagers did not report increased daily consumption of milk, while the overall sample, and each of the other subgroups, did.

Summary of Significant Change for Key Subgroups

Measure/Site	Subgroup				All Women
	High-risk Women	Early Enrollers	First-time Mothers	Teenagers	
Overall Nutrition Knowledge					
Southeast Site 1	✓	✓	✓	N/A	✓
Southeast Site 2	✓	✓	✓		✓
Mountain Plains Site 1	✓	✓		✓	✓
Mountain Plains Site 2	✓	✓	✓	✓	✓
Midwest Site 1	✓	✓	✓	N/A	✓
Midwest Site 2	✓	✓			✓
Infant Feeding Preference Score					
Southeast Site 1		✓		N/A	
Southeast Site 2	✓	✓	✓	✓	✓
Mountain Plains Site 1	✓	✓	✓	✓	✓
Mountain Plains Site 2	✓	✓	✓	✓	✓
Midwest Site 1	✓			N/A	
Midwest Site 2	✓				✓
Use of Prenatal Vitamins					
Southeast Site 1	✓	✓	✓	N/A	✓
Southeast Site 2					
Mountain Plains Site 1	✓	✓	✓	✓	✓
Mountain Plains Site 2	✓	✓	✓		✓
Midwest Site 1	✓	✓	✓	N/A	✓
Midwest Site 2	✓	✓	✓	✓	✓
Daily Milk Consumption					
Southeast Site 1	✓	✓	✓	N/A	✓
Southeast Site 2	✓	✓	✓		✓
Mountain Plains Site 1	✓	✓	✓		✓
Mountain Plains Site 2	✓	✓	✓		✓
Midwest Site 1	✓	✓		N/A	✓
Midwest Site 2	✓	✓	✓	✓	

✓ = Change from baseline to prenatal is statistically significant at the .05 or .01 level.

N/A = Sample size is less than 25.

Chapter 5

Participants' Satisfaction with WIC Nutrition Education

This chapter describes participants' satisfaction with the nutrition education component of the WIC Program. To date, very little work has been done on this topic. The information presented in this chapter, although not generalizable to all local WIC agencies, provides valuable information on how WIC participants may view the nutrition education component of the program. The chapter summarizes participants' opinions and perspectives about various aspects of WIC nutrition education as well as the WIC Program as a whole.

The last section of the chapter presents findings from an exploratory analysis that examined relationships between participants' nutrition education experiences and their overall level of satisfaction. Findings from this analysis offer insights into factors that may influence participants' satisfaction with WIC nutrition education.

Satisfaction with Components of WIC Nutrition Education

This section describes participants' satisfaction with written nutrition education materials and nutrition education classes. Data are also presented on the prevalence of unmet information needs among study participants and the issues/concerns involved.

Written Materials

Virtually all respondents reported receiving written nutrition education materials. At the time of the prenatal survey, three-quarters or more of the respondents in each site reported reading *all or most* of the materials provided (Exhibit 5.1). Another ten to 23 percent of the respondents reported reading *some* of the written materials. Very few respondents (2% or less in each site) indicated that they did not read any of the materials. The overall pattern of responses was similar for the postpartum survey data.

Women who reported reading at least some of the written materials provided by WIC were asked to rate the relative usefulness of the materials. More than half of the prenatal survey respondents in each site rated the written materials as either extremely useful or useful (Exhibit 5.2). With the exception of Southeast Site 1, roughly a third of the respondents found written materials to be only somewhat useful. A small percentage of women (3% or less in each site) judged the materials provided by WIC to be not very useful or useless. Again, the overall pattern of responses was similar for the postpartum survey data.

Respondents in Southeast Site 1 had a more favorable appraisal of written materials than respondents in any other site. This trend is noted consistently in the analyses presented in this chapter.

Exhibit 5.1

Amount of Written Materials Actually Read

		SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
Amount of written materials actually read		Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey							
All	(n = 322)	62.4%	(n = 308)	(n = 324)	(n = 304)	(n = 215)	(n = 236)
Most	20.2	32.1	42.9%	59.4%	57.0%	49.5%	57.8%
Some	17.1	23.4		27.2	30.4	26.9	25.9
None	0.3	1.6		13.3	9.7	21.8	13.4
				0.0	0.8	1.4	0.9
Postpartum Survey							
All	(n = 301)	74.1%	(n = 323)	(n = 233)	(n = 211)	(n = 229)	(n = 236)
Most	11.3	31.3	45.8%	52.8%	51.7%	58.5%	48.7%
Some	13.6	21.0		24.6	32.2	14.1	13.4
None	1.0	1.9		21.0	14.7	14.1	17.8
				1.6	1.4	0.5	0.1

Note: Sample sizes include only respondents who reported receiving written materials.

Exhibit 5.2

Reported Usefulness of Written Nutrition Education Materials

Written materials were ...	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey	(n = 321)	(n = 303)	(n = 324)	(n = 300)	(n = 215)	(n = 236)
Extremely useful	44.2%	29.1%	28.7%	23.5%	28.4%	27.6%
Useful	33.0	35.1	38.4	37.0	32.2	28.9
Somewhat useful	22.1	33.1	35.6	37.0	37.0	40.4
Not very useful/useless	0.6	2.6	2.2	2.6	2.4	3.1
Postpartum Survey	(n = 298)	(n = 316)	(n = 229)	(n = 208)	(n = 228)	(n = 234)
Extremely useful	47.1%	30.6%	28.7%	24.5%	28.9%	31.5%
Useful	29.4	39.4	35.3	37.0	33.7	10.6
Somewhat useful	12.8	26.8	32.7	35.6	36.0	55.3
Not very useful/useless	1.7	3.1	3.3	2.6	1.4	2.5

Note: Sample sizes include only respondents who reported reading at least some written materials.

Nutrition Education Classes

Women who reported attending at least one nutrition education class were asked to provide an overall assessment of the class(es) they attended. Response options ranged from very interesting to boring. The data suggest that, overall, WIC participants were more satisfied with classes than with written materials (Exhibit 5.3). More than 60 percent of prenatal survey respondents who attended a nutrition education class rated the class(es) as either very interesting or interesting. Postpartum assessments were somewhat more positive in two sites (Southeast Site 1 and Midwest Site 1), and somewhat more negative in three sites (Southeast Site 2, Mountain Plains Site 1, and Midwest Site 2).

Unmet Information Needs

As a means of gauging the responsiveness of WIC nutrition education to participants' individual needs, respondents were asked whether there were any issues or concerns they would have liked to discuss with a nutritionist or other WIC staff member. The data reveal relatively few instances where respondents were left with unanswered questions. With the exception of Southeast Site 1, fewer than five percent of the respondents identified an unmet information need in either the prenatal or postpartum surveys (data not shown).

In Southeast Site 1, the percentage of women reporting an unmet information need at the time of the prenatal survey (12%) was more than twice that of any other site. By the time of the postpartum survey, the prevalence of this problem had dropped considerably and was comparable to other study sites. This pattern suggests that language and/or cultural barriers may have complicated, but did not impede, communication of nutrition education messages in this site.

Unaddressed information needs identified by respondents included questions about infant feeding guidelines; personal concerns about pregnancy complications and/or risk factors; personal/social issues; and, for postpartum women, issues related to breastfeeding and weight loss.

Knowledge Gained from WIC

Participants were asked directly whether they learned anything from WIC ("Did you learn anything that you did not know before you visited the WIC Program?"). In most sites, less than half of the prenatal survey sample responded affirmatively (Exhibit 5.4). Results for the postpartum survey were quite similar, with the exception of Southeast Site 1. Change between prenatal and postpartum surveys, where noted, was always in a positive direction (at the group level). This was especially true in Southeast Site 1, where the percentage of respondents reporting that they learned something from WIC increased by more than 20 percentage points between surveys (from 43% to 65%).

Respondents who reported learning something from WIC were asked to identify what was learned. Responses were consistent with findings reported in Chapters 2 and 3 regarding topics covered in WIC nutrition education. The topic areas in which most respondents reported knowledge gain were guidelines for healthy eating during pregnancy and breastfeeding (Exhibit D.13).

Respondents' self-reports about knowledge gain correspond well with changes in both nutrition knowledge scores and infant feeding preference scores, as described in Chapter 4. Although

Exhibit 5.3

Participant Assessments of Nutrition Education Classes

Classes were ...	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey						
Interesting ¹	(n = 146) 80.8%	(n = 105) 67.6%	(n = 248) 62.5%	(n = 11) N/A	(n = 26) 76.9%	(n = 67) 70.2%
Somewhat interesting	16.4	20.9	23.4	N/A	11.5	22.4
Boring ²	2.7	11.4	14.1	N/A	11.5	7.5
Postpartum Survey						
Interesting ¹	(n = 210) 95.2%	(n = 133) 63.9%	(n = 245) 57.6%	(n = 1) N/A	(n = 39) 84.6%	(n = 103) 62.1%
Somewhat interesting	2.4	23.3	24.5	N/A	10.3	27.2
Boring ²	2.4	12.8	18.0	N/A	5.1	10.7

N/A = Data not reported because sample size is less than 25.

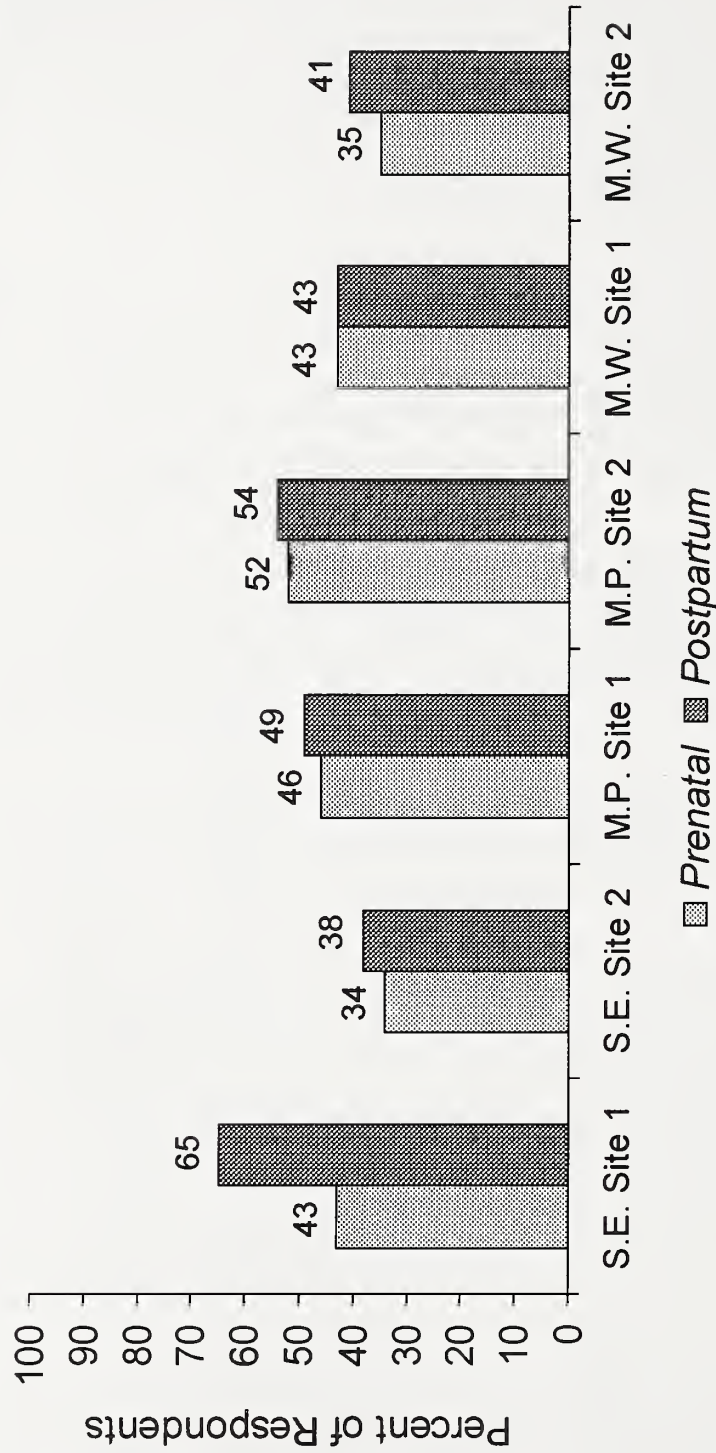
Notes: Sample sizes include only respondents who reported attending a WIC class.
Percentages may not sum to 100 due to rounding.

¹Includes ratings of "very interesting" and "interesting".

²Includes ratings of "somewhat boring," "boring," and "very boring."

Exhibit 5.4

Percentage of Respondents Who Reported Learning Something from WIC



Note: Answered yes to question "Did you learn anything that you did not know before you visited the WIC clinic?"

knowledge scores increased significantly over time for both self-described learners and non-learners, respondents who said they learned something from WIC (self-described learners) gained significantly more knowledge than respondents who said they did *not* learn anything from WIC (self-described non-learners) (Exhibit 5.5). Mean overall knowledge scores for self-described learners increased 6.8 percentage points between the baseline and prenatal surveys, compared to 4.5 percentage points for self-described non-learners. Likewise, between the baseline and postpartum surveys, overall knowledge scores increased 8.8 points for self-described learners compared to 6.3 percentage points for self-described non-learners.

Thus, the data indicate that both learners and non-learners increased their nutrition knowledge over the course of the study. The fact that participants who reported learning something from WIC showed significantly greater gains in knowledge than participants who said they did not learn anything from WIC suggests that, for these participants, at least some of the knowledge gain realized over time is attributable to WIC nutrition education.

A similar pattern was noted for the infant feeding preference score. Scores for self-described learners showed a statistically significant increase ($p < 0.01$) of 7.7 percentage points between the baseline and prenatal surveys (Exhibit 5.6). In contrast, scores for non-learners increased only 3.7 percentage points and this increase was not statistically significant. The increase in infant feeding preference score, which indicates an improved attitude toward breastfeeding, is consistent with the finding that breastfeeding was the second most commonly cited area in which knowledge was gained from WIC.

Best and Worst Aspects of the WIC Program

Respondents were asked to identify up to three things they liked about the WIC Program and up to three things they disliked. A comprehensive summary of responses is provided below.

Best Aspects of the WIC Program

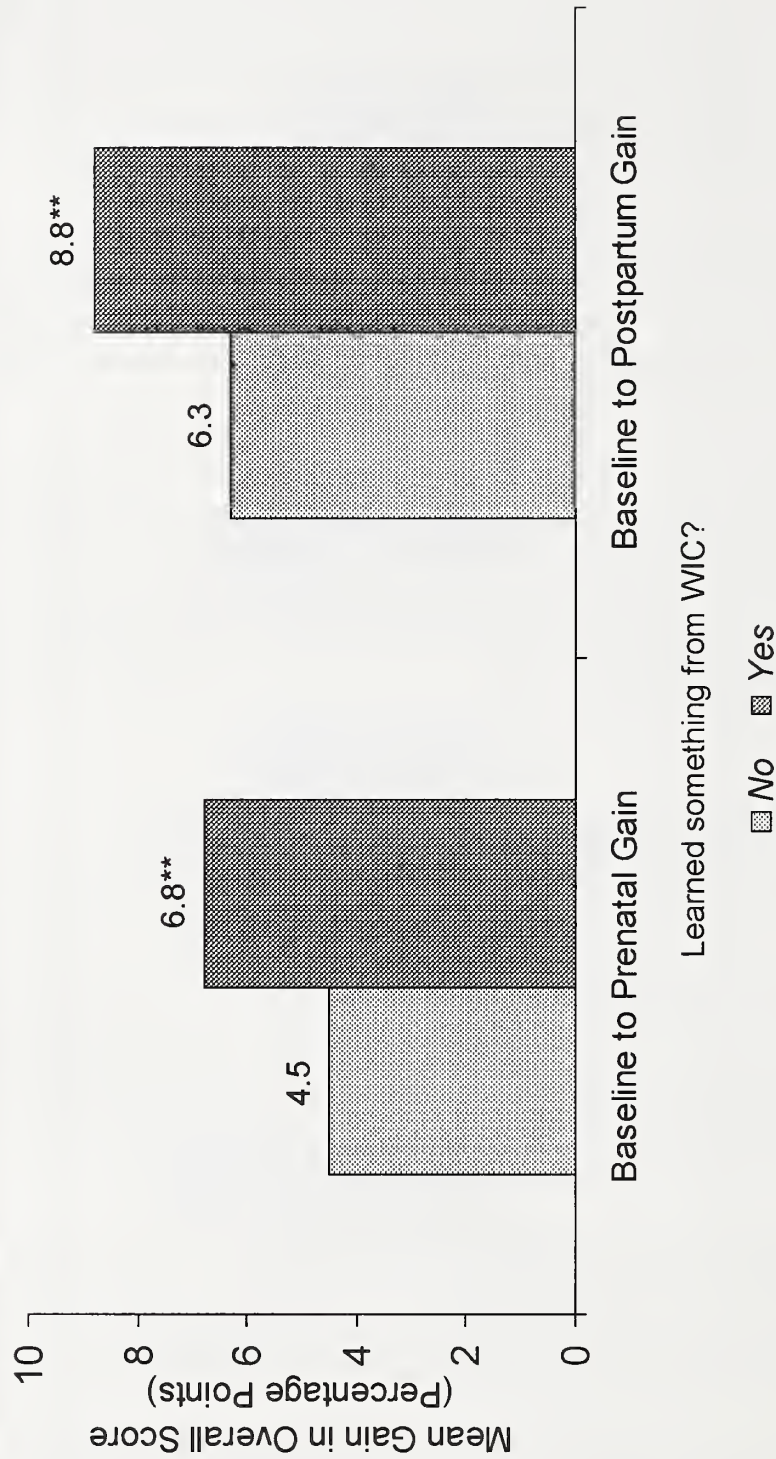
Respondents had no trouble identifying positive aspects of the WIC Program, although there was some variation across sites in the specific characteristics mentioned (Exhibit 5.7). WIC supplemental foods ranked as the leading positive program attribute in all six sites in both prenatal and postpartum surveys. This was the only program characteristic that was consistently included in the top three positive aspects of the WIC Program.

The next most frequently cited program feature, included among the top three in all sites except Southeast Site 2 and Mountain Plains Site 2 (postpartum survey), was that the WIC Program and/or its' staff cares about participants. An argument can easily be made that the nutrition education component of the program plays a role in generating this perception.

Other program characteristics that vied for third place on the top-three list for all sites combined included "learn about healthy eating," "talking to the nutritionist," and "talking with other WIC staff." All three of these responses are clearly related to the nutrition education component of the WIC Program.

Exhibit 5.5

Self-Described Learners Had Significantly Larger Gains in Overall Nutrition Knowledge Scores

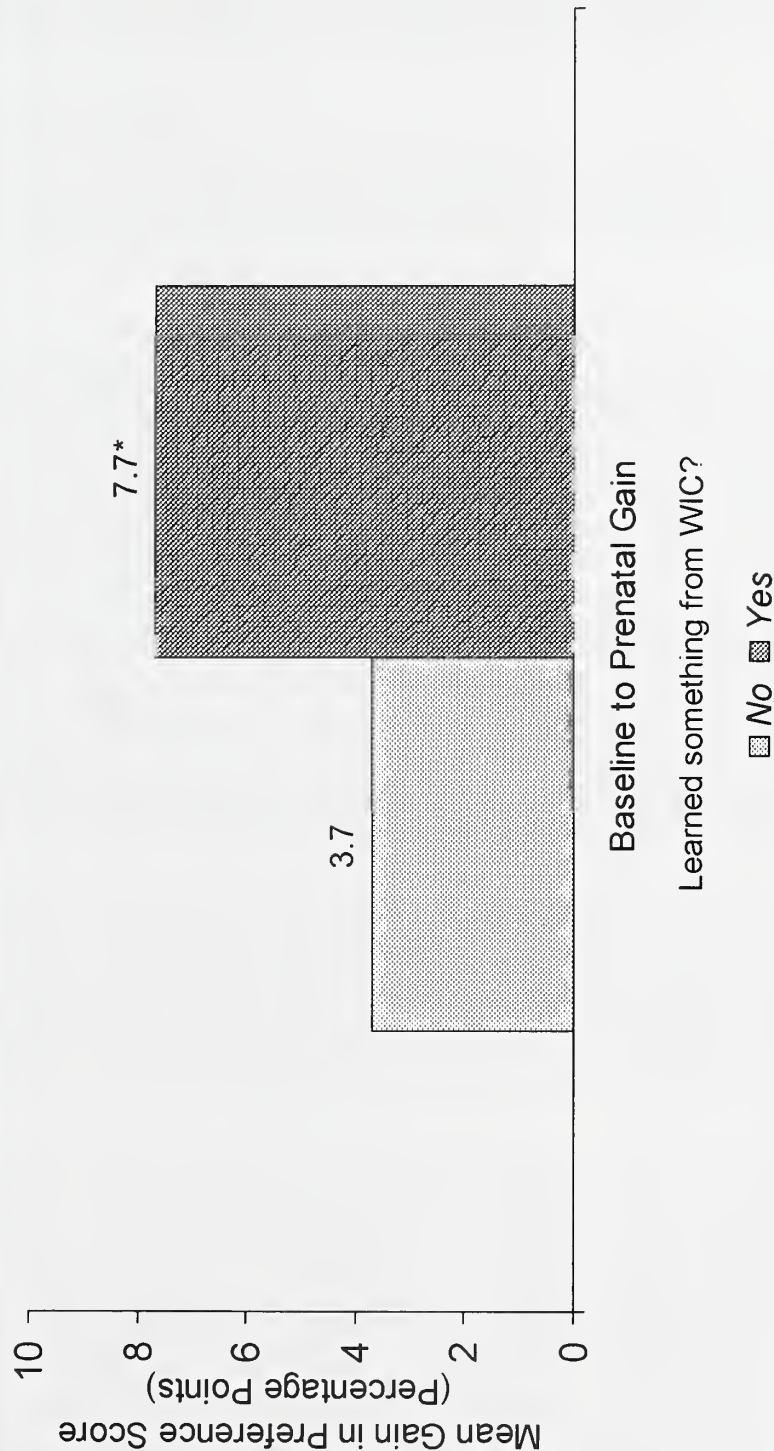


**Difference between two groups is statistically significant at the .01 level.

Note: Knowledge gain from baseline is statistically significant, at the .01 level, for all four groups.

Exhibit 5.6

Self-Described Learners Had Significantly Larger Gains in Infant Feeding Preference Scores



*Difference between two groups is statistically significant at the .05 level.

Note: Increase in score from baseline is statistically significant, at the .01 level, only for the self-reported learners.

Exhibit 5.7

Best Aspects of the WIC Program

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey	(n = 324)	(n = 329)	(n = 333)	(n = 310)	(n = 216)	(n = 216)
WIC foods	58.0%	76.6%	61.9%	69.2%	63.4%	64.4%
Program/staff care(s) about me	44.8	11.9	52.6	30.8	35.7	40.3
Learn about healthy eating	28.4	27.4	24.0	21.9	21.8	3.4
Talking to the nutritionist	40.7	17.0	8.1	6.8	19.0	19.3
Talking with other WIC staff	6.5	14.3	11.7	34.2	17.6	1.3
Easy access	13.0	9.7	16.8	8.9	16.7	16.7
Vouchers are easy to use	11.7	9.7	4.2	0.8	13.4	5.6
Nutrition education materials/sessions	8.0	6.7	6.6	3.4	7.9	15.0
Learn about breastfeeding	10.8	10.0	6.9	7.2	3.7	3.9
Easy to apply for WIC	12.0	9.1	3.9	3.8	12.5	2.6
Staff check my weight	5.6	0.9	5.4	12.7	1.9	2.6
Staff check my child's weight	2.8	1.2	1.8	3.0	3.7	2.2
Everything ("it's a good program")	0.9	3.0	5.7	7.6	0.5	3.0
Learn about infant/child feeding	8.3	1.2	5.7	7.6	2.8	2.2
Postpartum Survey	(n = 301)	(n = 344)	(n = 237)	(n = 218)	(n = 233)	(n = 239)
WIC foods	73.8%	79.1%	68.4%	68.8%	71.3%	68.6%
Program/staff care(s) about me	46.5	7.9	48.4	16.1	40.7	33.0
Learn about healthy eating	25.6	27.6	16.8	28.0	9.7	3.8
Talking to the nutritionist	37.9	23.3	5.5	1.8	14.4	24.7
Talking with other WIC staff	4.0	17.8	7.7	40.4	38.9	2.1
Easy access	6.0	12.5	20.7	13.8	15.7	18.4
Vouchers are easy to use	10.6	1.2	1.6	0.0	6.0	0.0
Nutrition education materials/sessions	6.3	6.4	6.5	3.7	6.0	14.2
Learn about breastfeeding	9.0	8.1	5.2	4.6	1.8	4.6
Easy to apply for WIC	16.6	3.5	3.9	2.3	8.8	5.0
Staff check my weight	1.3	1.2	3.2	5.0	3.7	1.3
Staff check my child's weight	1.3	3.8	2.6	8.3	9.3	2.9
Everything ("it's a good program")	0.3	1.2	4.5	2.3	1.4	1.3
Learn about infant/child feeding	10.6	2.6	7.4	9.2	2.3	0.8

Note: Lists include items mentioned by five percent or more of the respondents in any site at either measurement point.

Other positive characteristics, mentioned by at least ten percent of the respondents in two or more sites, included the fact that it's easy to get to and/or use the WIC Program (e.g., convenient location and hours of operation); it's easy to apply for and access the WIC Program; vouchers are easy to use; and participants learn about breastfeeding. Although there were minor variations across sites, the overall pattern of responses was similar for prenatal and postpartum surveys.

Worst Aspects of the WIC Program

Respondents in most sites found it more difficult to identify unfavorable aspects of the WIC Program than favorable aspects. With the exception of Southeast Site 2, more than two-thirds of prenatal respondents and more than half of postpartum respondents were unable to identify anything they did not like about WIC (Exhibit 5.8).

Program characteristics most often considered as negative were the time required to participate and the types of food offered. The former was the chief complaint made by participants in both Midwest sites, which seems consistent with the high no-show rates noted in these sites during on-site observations (Chapter 2) and the small percentages of respondents who received two or more nutrition education contacts (Chapter 3). The latter was the primary complaint in Southeast Site 1 and in both Mountain Plains sites. Southeast Site 1 had a large population of recent immigrants and the two Mountain Plains sites had sizeable Hispanic populations.

Less frequently cited negatives, mentioned by less than ten percent of the respondents in most sites, included the quantities of foods provided in WIC food packages; access issues (e.g., location, operating hours, waiting room space); and interactions with WIC staff. The latter included general complaints about staff attitudes and specific complaints about excessive emphasis on breastfeeding; staff being too rushed or disorganized; and space being too noisy or crowded to permit reasonable conversations.

The percentage of respondents that was able to identify a negative aspect of the WIC Program increased slightly in most sites between the prenatal and postpartum surveys. The specific characteristic that showed the greatest change over time was "interaction with WIC staff." Although the shift was not dramatic, the relative consistency of the trend across sites is noteworthy and suggests that there may have been some deterioration in staff/participant interactions over time.

Responses for Southeast Site 2 were notably different from the other five sites. The percentage of respondents who indicated that they liked everything about WIC was lower in this site than in any of the other sites (51% *versus* 67-81% in the prenatal survey). The most common complaint registered by respondents in this site was that WIC required too much time. The prevalence of this complaint was more than double that seen in any of the other sites. Data reported later in this chapter suggest that this complaint is specifically related to time spent waiting to see WIC staff.

Suggestions for Improvement

Respondents were asked to provide specific suggestions for improving WIC nutrition education ("Do you have any suggestions about how WIC can improve the way they provide information on healthy eating?"). Few respondents were able to offer specific suggestions (Exhibit D.14). In the prenatal

Exhibit 5.8

Worst Aspects of the WIC Program

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey	(n = 324)	(n = 329)	(n = 333)	(n = 310)	(n = 216)	(n = 216)
Nothing (everything is positive)	80.6%	51.4%	67.3%	76.0%	72.2%	67.4%
Time requirement	5.6	21.0	6.3	4.2	10.2	9.9
WIC foods (types)	8.0	10.0	9.0	9.6	3.0	4.6
Interaction with WIC staff	3.1	7.6	6.6	4.2	1.4	4.7
Access issues	1.9	6.7	3.9	3.8	6.9	4.7
Quantities of food provided	3.7	4.6	3.9	2.1	2.8	1.7
Information provided (not enough/inappropriate)	0.3	1.5	3.6	4.2	1.4	2.6
Nutrition education materials	2.8	2.7	0.9	0.0	0.5	3.0
Other	0.6	9.4	5.1	6.8	4.6	6.4
Postpartum Survey	(n = 301)	(n = 344)	(n = 237)	(n = 218)	(n = 233)	(n = 239)
Nothing (everything is positive)	81.7%	46.2%	59.0%	68.4%	71.3%	64.4%
Time requirement	2.3	29.9	5.8	8.7	4.6	12.1
WIC foods (types)	8.4	9.0	11.6	4.2	5.6	2.5
Interaction with WIC staff	4.7	11.0	7.1	8.7	7.4	8.4
Access issues	0.7	6.7	8.1	8.7	7.4	6.3
Quantities of food provided	2.3	5.2	5.8	0.9	1.8	1.7
Information provided (not enough/inappropriate)	0.7	2.3	5.2	4.1	2.8	2.5
Nutrition education materials	1.0	2.6	0.7	0.0	0.0	5.0
Other	1.0	9.9	6.8	3.2	7.9	4.2

Note: Lists include items mentioned by five percent or more of the respondents in any site at either measurement point. All responses included in "other" category were cited, on an individual basis, by less than 3 percent of the respondents in any site.

survey, suggestions were offered by four to 15 percent of the respondents. The range for the postpartum survey was three to 19 percent.

Among respondents who did offer suggestions, the most common recommendation was to improve the content and/or delivery of nutrition education. Specific recommendations included increasing individualized contact and increasing participants' awareness of, or opportunities for, nutrition education. Here, participants offered a variety of recommendations that ran the gamut from making attendance at nutrition education classes mandatory to sending nutrition education materials through the mail. Other recommendations offered by respondents included: decrease waiting time; improve office atmosphere and/or staff attitudes; and increase the availability of bilingual nutritionists.

Overall Satisfaction with WIC Nutrition Education

Overall satisfaction with WIC nutrition education was evaluated using a series of statements that assessed the extent to which participants' experiences with WIC nutrition education were associated with desirable characteristics such as friendly, helpful, and respectful staff; feelings of satisfaction when leaving the WIC clinic; having questions answered; and having information provided in terms that could be easily understood. Respondents were asked to register agreement (strongly agree or agree) or disagreement (disagree or strongly disagree) with each statement (see section B5 in the sample prenatal survey in Appendix A).

The data indicate that, overall, the vast majority of respondents in all six study sites were quite satisfied with WIC nutrition education (Exhibit D.15). In five of the six study sites, more than 90 percent of the respondents found WIC staff to be helpful as well as warm and friendly; believed that WIC staff respected them as individuals; found explanations offered by WIC staff to be readily understandable; had their questions answered; felt satisfied when they left the WIC clinic; and found the information provided by WIC staff to be helpful. Likewise, more than 90 percent of the respondents did *not* feel confused when they left the WIC clinic.

The only sites that did not fit this pattern for one or more of the attributes investigated were the two Southeast sites. This is consistent with other data presented in this chapter. Specifically, respondents in Southeast Site 2 reported more negative feelings about the WIC Program than respondents in any other site (Exhibit 5.8). The major complaint was the time required to participate in WIC. The data presented in Exhibit D.15, e.g., responses to the item "The staff made me wait too long," suggest that the problem with the time requirement was largely due to the amount of time participants had to wait to be seen. (This may be one reason for the waiting room nutrition education classes taught in this site). The time required to actually participate in nutrition education contacts in Southeast Site 2 was not noticeably greater than other sites. The duration of observed prenatal contacts was on the high end of the range (see Chapter 2), but by no means the longest, and the length of postpartum contacts was actually shorter than most other sites.

In Southeast Site 1, 16 percent of prenatal respondents *agreed* with the statement "I felt confused when I left the WIC clinic" (compared to 2-5% in other sites). This is consistent with the previously reported finding that 12 percent of prenatal respondents in this site reported having unmet information needs. In the postpartum survey, the percentage of respondents reporting confusion

dropped to seven percent (Exhibit D.15) and the percentage reporting unmet information needs dropped to six percent (data not shown). These patterns suggest that the language barriers present in this site complicated, but did not prevent, transmission of nutrition information from WIC staff to program participants.

The highly positive ratings for items related to the nutrition education component of the WIC Program may appear somewhat surprising in view of the fact that, in most sites, less than half of the respondents reported learning anything from WIC (Exhibit 5.4). A possible explanation for this apparent contradiction is that women who believed they did not learn anything from WIC did not expect to do so or did not place a premium on knowledge gain.

It is also possible that the generally positive and helpful attitude of WIC nutrition education staff, in combination with the overarching benefit of the WIC food package and the relative ease with which WIC benefits can be accessed and utilized, outweighs any negative reactions participants might have about the lack of new information.

Although the overall picture of participant satisfaction is highly positive, respondents did identify some areas of dissatisfaction (Exhibit D.15). Five to 37 percent of the respondents reported a concern about the waiting time at WIC clinics (agreed or strongly agreed with the statement "The staff made me wait too long"). The percentage of respondents who said they had to wait too long increased between the prenatal survey and the postpartum survey in five of the six sites. As noted above, waiting time was a particular problem in Southeast Site 2. While the survey item was meant to capture concerns about time spent in waiting rooms waiting to be seen by WIC staff, it is possible that some respondents considered the entire time spent at the WIC clinic, including time associated with nutrition education contacts, in their response.

Another area of dissatisfaction was the fact that some of the information and guidance provided by WIC staff conflicted with information provided by physicians (agreed or strongly agreed with the statement "Some of the advice I received contradicted what my doctor told me"). At the time of the prenatal survey, the percentage of respondents reporting such conflicts ranged from 15 to 24 percent. The issue of contradictory advice was mentioned in participant focus groups conducted during the formative stages of this study. According to focus group participants, conflicts most often involved advice related to weight gain during pregnancy, the need for iron supplements (i.e., whether or not a respondent was anemic), and breastfeeding.

In all six sites, the prevalence of contradictory advice increased in the postpartum survey (range from 24% to 47%). Based on comments from WIC staff and preliminary focus group work, conflicts during the postpartum period most often involved breastfeeding — with WIC staff encouraging breastfeeding and local physicians either downplaying or actually discouraging breastfeeding.

Some dissatisfaction was also expressed about advice related to breastfeeding. The statement "The counselor helped me decide how to feed my baby" was included in the survey as a means of measuring, indirectly, participant resistance to breastfeeding promotion. Results suggest that participants in some sites did not find WIC staff to be particularly helpful in this area. With the exception of Southeast Site 1 and Mountain Plains Site 2, less than half of the respondents indicated that WIC nutrition educators were helpful in making decisions about how they would feed their

babies. This is consistent with the finding—reported in Chapter 4—that the percentage of women who initiated breastfeeding was essentially the same as the percentage who reported an intention to breastfeed at the time of prenatal certification.

Relationship Between Satisfaction and Nutrition Education Experiences

This section presents results of an exploratory analysis that examined the relationship between participants' experiences with WIC nutrition education and their reported level of satisfaction. The discussion has two parts. The first part describes the development of a composite measure of satisfaction. The second part discusses the relationship between the composite satisfaction measure and participants' WIC experiences.

Construction of a Composite Measure of Satisfaction

Factor analysis was used to identify a subset of the 12 individual satisfaction items (see section B5 in prenatal survey (Appendix A)) that could reasonably be combined into a single composite measure of satisfaction. Factor analysis is an analytic technique in which variables that are correlated with one another, but largely independent of other subsets of variables, are combined into discrete "factors." Factors are thought to reflect underlying processes that contribute to the correlations among the variables.

An important first step in factor analysis is determining the number of salient factors represented by a certain collection of variables. For example, in tests of general scholastic aptitude, one might expect at least two factors to emerge, one representing math aptitude and the other representing reading and vocabulary aptitude.

When prenatal and postpartum survey data were analyzed, a single factor emerged from the 12 individual satisfaction items. Most of the individual survey items had high factor loadings on the single factor, indicating measurement of a common construct. The common construct can reasonably be described as a measure of overall satisfaction with WIC nutrition education.¹

Three items had relatively small factor loadings, indicating a poor "fit" with the common construct of overall satisfaction with WIC. A poor fit means that many women who had high scores on the other satisfaction measures disagreed (or agreed, for negatively worded statements) with the statement. Or, conversely, women who had low satisfaction scores agreed or strongly agreed with the statement. The three poor-fitting items were "The counselors helped me decide how to feed my baby;" "Some of the advice I received was different from my doctor's [advice];" and "The staff made me wait too long." These items were excluded from the composite satisfaction measure.

After site-specific analyses confirmed that the relationship among satisfaction variables was generally consistent across all six sites, a composite satisfaction measure was created by taking the mean of the responses to the nine items with high factor loadings (greater than .40, absolute value).

¹ Factor loadings for each individual item, which represent the relationship between the variable and the common factor, are shown in Exhibit D.16. Large factor loadings (absolute value) indicate high correlations between the observed variable and the underlying common factor.

Responses were coded on a scale of one to four so that strongly agree was given the value of four, and strongly disagree was assigned a value of one. The item "I felt confused when I left the WIC clinic" was coded in reverse order.

Relationships Between Overall Satisfaction and Nutrition Education Experiences

Regression analysis was used to explore relationships between overall satisfaction, individual measures of satisfaction, and participants' experiences with WIC nutrition education. Experience variables were defined based on data from participant self-reports and WIC administrative records. The following variables were included in the regressions:

Participant Self-Reports

- read all, most, some, or none of the written materials provided;
- thought written materials were useful;
- had no outstanding issues/questions to discuss with WIC staff;
- was *not* referred to any other programs or services;
- thought nutrition education classes were interesting;
- did *not* learn anything from WIC;
- did *not* believe the waiting time was too long;
- did *not* receive information that was contradictory to advice provided by doctor; and
- reported that WIC staff helped decide how to feed baby.

WIC Administrative Records

- met one-on-one with a nutritionist;
- met one-on-one with other WIC nutrition educator; and
- *not* still receiving WIC benefits at time of survey.

In the regression models (separate models were run for prenatal and postpartum data), each item appeared as a dummy-coded factor. For example, the item "had no outstanding issues" was coded as a zero if the respondent *did* report having outstanding issues, and as a one if the respondent *did not* report outstanding issues. For variables with four or more possible responses, several response categories were combined, based on results of preliminary analyses, to reduce the number of contrasts and simplify interpretation of results.

Many of the nutrition education experience measures had strong positive associations with overall satisfaction (regression coefficients and standard errors are shown in Exhibits D.17 and D.18). Women who had the following types of experiences reported significantly higher overall levels of satisfaction than women who had other experiences (items are listed in descending order of importance, based on regression coefficients for the prenatal survey):

- strongly agreed that counselors helped in decision about how to feed their baby;
- strongly *disagreed* that WIC staff made them wait too long;
- strongly *disagreed* that advice given by WIC was contradictory to advice given by physician;

- thought written nutrition education materials were useful or very useful; and
- did *not* have any outstanding issues/questions to discuss.

In addition, two factors—*not* having been referred to health or social services and *not* learning anything new from WIC—were associated with slightly lower levels of overall satisfaction.

Results were consistent for both prenatal and postpartum surveys. Moreover, results were consistent when site variables were added to the regression models, indicating that results were generally consistent across sites.

The two variables that defined the type of nutrition education staff encountered by sample members were not found to have strong associations with overall satisfaction. The association between having “met one-on-one with other WIC nutrition educator” and level of satisfaction was weak but statistically significant. The variable “met one-on-one with a nutritionist” yielded inconsistent results in the two models. Coefficients were small and negative in both the prenatal and postpartum models, and statistically significant only in the prenatal model. In comparison to the strength and consistency of relationships noted for the other variables, this pattern suggests that the relationship between these variables and participant satisfaction is weak to non-existent. This, in turn, suggests that the type of staff person involved in providing nutrition education is less important than the content of the nutrition education and the context in which it was provided (e.g., waiting time, quality of written materials, etc.).

In summary, findings from this analysis indicate that, while most respondents were quite satisfied with WIC nutrition education, the specific characteristics of an individual’s nutrition education experiences had a significant influence on their overall level of satisfaction. For the most part, the associations between characteristics of nutrition education experiences and overall satisfaction were in the expected directions. For example, women who strongly agreed that a WIC counselor had helped them decide how to feed their babies were more satisfied than women who either were more equivocal or who disagreed with the statement. Women who found written materials to be useful were more satisfied than those who didn’t receive any written materials or thought the materials they received were of little use.

In considering these findings, it is important to remember that, because overall satisfaction with WIC was quite high, the magnitude of the differences associated with indicators of nutrition education experiences, while statistically significant, were generally small.

Chapter 6

Attitudinal and Social Influences on Selected Behaviors

This chapter presents results of two analyses that examined the influence of selected attitudinal and social characteristics on behavioral outcomes of interest to WIC nutrition educators. The first analysis examined factors that may influence the initiation and duration of breastfeeding, including beliefs about the advantages and disadvantages of breastfeeding and personal breastfeeding exposure and experiences. The second analysis examined the effect of social support on eating habits during pregnancy and on use of cigarettes and alcohol. The initial plan for this analysis also included an investigation of the influence of social support on the initiation and duration of breastfeeding, however, this analysis was not pursued because only seven percent of the sample reported the presence of negative social support for breastfeeding.

Factors Influencing Women's Breastfeeding Intentions and Behaviors

The decision to initiate breastfeeding is one of the major outcomes of interest for WIC nutrition education. Data from this study confirm what previous studies have shown: women's breastfeeding behaviors are strongly associated with stated intentions during pregnancy. For example, 85 percent of the women in this study who breastfed their babies indicated their intention to do so in the baseline survey (at the time of WIC certification). Conversely, 73 percent of women who did *not* breastfeed their babies indicated at baseline that they planned to use formula exclusively. This pattern suggests that identification of variables that are associated with women's breastfeeding intentions and are amenable to change may be useful in focusing breastfeeding promotion efforts.

To identify such variables, the analysis examined the relationship between beliefs about the advantages and disadvantages of breastfeeding and breastfeeding intentions and behaviors. The analysis was modeled after several other studies that examined determinants of breastfeeding (Gielen, A.C., et al., 1992; Manstead, A.S., et al., 1983; and Matheny, R.J., et al., 1987) and incorporated tenets of the *theory of reasoned action* (Ajzen, I. and M. Fishbein, 1975). According to the *theory of reasoned action*, individuals consider the implications of their actions before deciding to engage in a behavior.

Behavioral Beliefs and Evaluation Factors

Exhibit 6.1 lists the behavioral beliefs (potential advantages and disadvantages of breastfeeding and bottle feeding) and evaluation factors (potential consequences of breastfeeding and bottle feeding) included in study instruments (see Appendix A). For the behavioral belief items, women were asked to respond on a six-point scale ranging from strongly agree to strongly disagree. A different six-point response scale, ranging from extremely important to not at all important, was used for the evaluation factors.

Behavioral beliefs and evaluation factors were combined to create three scores: a ***breastfeeding score***, a ***bottle feeding score***, and an ***infant feeding preference score***. The breastfeeding and bottle feeding scores were the sums of scores for each of the behavioral belief items (strongly agree to strongly

Exhibit 6.1

Behavioral Beliefs and Evaluation Factors Used to Assess Infant Feeding Preference

BEHAVIORAL BELIEFS

Breastfeeding ...

is a very convenient method of feeding.
helps protect the baby against infection.
helps mother feel close to the baby.
helps the mother lose weight.
is embarrassing for the mother.
makes it difficult for the mother to go out.
is difficult to do successfully.
is the best nourishment for the baby.
requires the mother to watch what she eats
and drinks.

Bottle feeding ...

increases chances that the baby will have
colic.
provides incomplete nourishment.
makes it easier for other family members
to be involved in feeding the baby.
makes it easier for the mother to go to
work or school.
is an expensive method of feeding.
is a trouble-free method of feeding.
allows one to see exactly how much milk
the baby has had.

EVALUATION FACTORS

How important is it that the feeding method you choose ...

is convenient?
helps protect the baby against infection?
helps you feel close to the baby?
helps you lose weight?
provides complete nourishment for the baby?
allows father or other family members to feed the baby?
does not make you feel embarrassed?
allows you to go out socially?
makes it easy for you to go to work or school?
is trouble free?
is inexpensive?
allows you to see exactly how much milk the baby has had?
decreases the chance of getting colic?
does not require you to watch what you eat or drink?

disagree), weighted by the relative degree of importance attributed to the item (extremely important to not at all important). Scores for belief items that were negative for a specific feeding method (e.g., "Breastfeeding is embarrassing for the mother") were reversed. The scores assigned to each behavioral belief were:

Strongly agree:	2.5
Agree:	1.5
Somewhat agree:	0.5
Somewhat disagree:	-0.5
Disagree:	-1.5
Strongly disagree:	-2.5

The following scores were assigned to each evaluation factor:

Extremely important:	6
Very important:	5
Somewhat important:	4
Somewhat unimportant:	3
Not very important:	2
Not important at all:	1

Thus, if a woman strongly agreed with all five positive beliefs about breastfeeding, strongly disagreed with all four negative beliefs about breastfeeding, and rated all nine items as extremely important, her breastfeeding score would be the maximum of $9 \times 2.5 \times 6$, or 135. Conversely, if she strongly disagreed with the four positive beliefs about bottle feeding, strongly agreed with the three negative beliefs about bottle feeding, and assigned extreme importance to each belief, her bottle feeding score would be the minimum of $7 \times (-2.5) \times 6$, or -105.

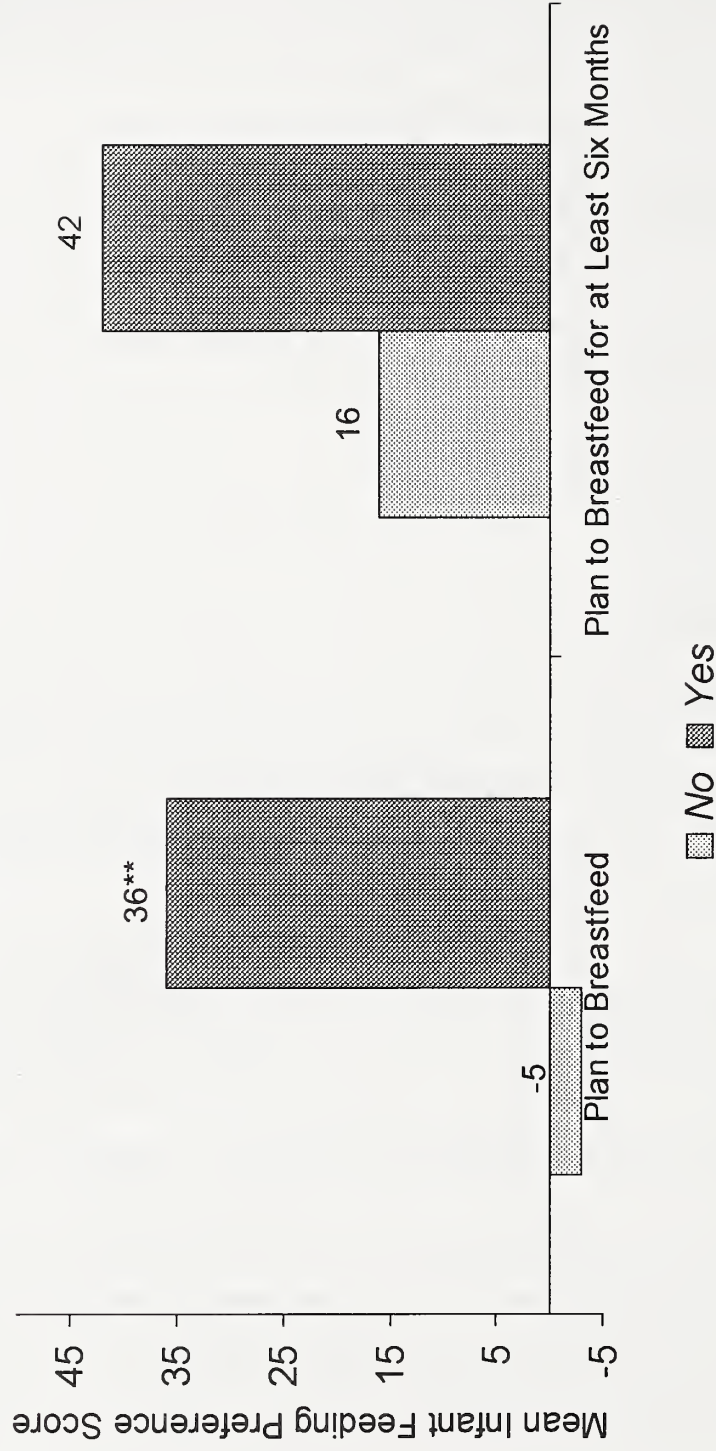
The infant feeding preference score was calculated as the difference between breastfeeding and bottle feeding scores. The higher the score, the greater the preference for breastfeeding. In actual practice, scores as high as 103.75 and as low as -45 were observed at baseline for the breastfeeding and bottle feeding scores, respectively. Actual infant feeding preference scores were as high as 138.75.

Relationship Between Infant Feeding Preference Scores and Breastfeeding Intentions and Behaviors

Infant feeding preference scores were strongly related to both breastfeeding intentions and actual breastfeeding behaviors. As shown in Exhibit 6.2, the mean infant feeding preference score at baseline was 36 for women who planned to breastfeed either exclusively or in combination with formula feeding. The mean score for women who planned to bottle feed exclusively was significantly lower, at -5. Similarly, scores for women who reported an intention to breastfeed for six months or more were significantly higher than scores for women who did not plan to breastfeed for at least six months (42 *versus* 16).

Exhibit 6.2

Infant Feeding Preference Scores by Baseline Intentions



**Difference between scores is statistically significant at the .01 level.

Infant feeding preference scores were also strongly related to actual breastfeeding behaviors (Exhibit 6.3). Women who initiated breastfeeding had significantly higher infant feeding preference scores than women who did not breastfeed at all (35 *versus* 6). Moreover, women who breastfed for six months or more (exclusively or in combination with formula) had a significantly higher mean score at baseline than women who breastfed for less than six months (43 *versus* 22).

The relationship between infant feeding preference scores and breastfeeding intentions and behaviors remained strong even after women's demographic and other characteristics were taken into account. Four measures of breastfeeding intentions (intent to breastfeed exclusively; intent to use breastfeeding in combination with bottle feeding; intended duration of breastfeeding (months); and intent to breastfeed for at least six months) were regressed on infant feeding preference score, including as covariates site indicators; key demographic characteristics; household needs and resources; pregnancy, childbirth, and WIC history; and baseline measures of nutrition knowledge, attitudes, and behaviors. Separate models were run for baseline data and prenatal survey data. Comparable regressions were run for three measures of breastfeeding behavior (initiated breastfeeding (either exclusively or in combination with bottle feeding); breastfeeding duration (months); and breastfed for six months or more).

In all 11 models (four using baseline intentions, four using prenatal intentions, and three using actual behaviors) the relationship between infant feeding preference score and breastfeeding intentions or behaviors was positive and statistically significant (data not shown). These results indicate that infant feeding preference score is a strong predictor of breastfeeding intentions and subsequent behaviors, regardless of an individual's background characteristics. If WIC nutrition education can bring about a positive and sustained improvement in women's perceptions about the benefits of breastfeeding, and/or on the weight women give to perceived drawbacks, it may be able to influence the initiation and duration of breastfeeding among WIC participants.

Of the 16 behavioral belief items included in the infant feeding preference score, the four that appear to be the most amenable to change, i.e., the beliefs that showed the greatest change between the baseline and prenatal surveys were:

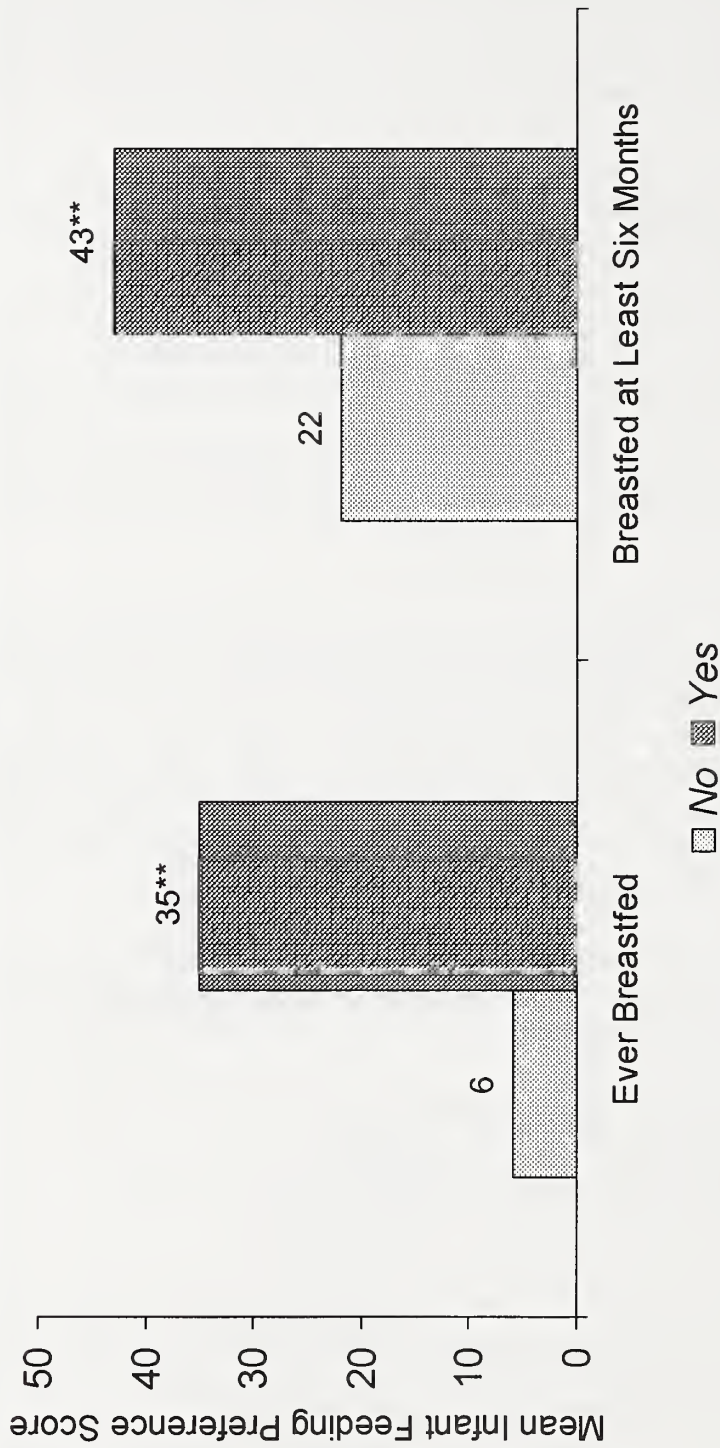
- breastfeeding helps protect the baby against infection;
- breastfeeding helps the mother lose weight;
- breastfeeding makes it difficult for the mother to go out; and
- bottle feeding is a trouble-free method of feeding.

Between baseline and prenatal surveys, there was an increase in the percentage of respondents who *agreed* with the first two items and an increase in the percentage who *disagreed* with the third and fourth items. Each of these changes contributed to an improvement in the overall infant feeding preference score (more favorable to breastfeeding) between baseline and prenatal surveys.

While these beliefs may be good candidates for WIC breastfeeding promotion efforts, because they appear to be amenable to change, the data reported in Chapter 4 suggest that breastfeeding promotion efforts should also focus on behavioral beliefs that are least favorable to breastfeeding and *did not* show substantial improvement over time. The data show that the improvement in infant feeding preference scores at the time of the prenatal survey was essentially transient and did not lead to a

Exhibit 6.3

Infant Feeding Preference Scores by Actual Breastfeeding Behaviors



**Difference between scores is statistically significant at the .01 level.

significant change in women's behaviors (compared to stated intentions at the time of WIC enrollment).

Beliefs that showed the least improvement between baseline and prenatal surveys included:

- breastfeeding is a very convenient method of feeding;
- bottle feeding makes it easier for other family members to be involved;
- bottle feeding makes it easier for the mother to go to work or school; and
- breastfeeding requires the mother to watch what she eats and drinks.

The theme of convenience/burden clearly underlies all of these beliefs.

Breastfeeding Exposure and Experience

Women were asked about their previous exposure to and experience with breastfeeding: whether they had been breastfed themselves; whether their mother had breastfed any of their siblings; whether any friends or relatives had breastfed a baby; and whether they had breastfed a previous infant. Most women (82 percent) had some prior exposure to or experience with breastfeeding. Over 70 percent had a friend or relative who had breastfed a baby and 27 to 39 percent had experienced the other types of exposure.

Relationships between all four of the breastfeeding exposure variables and the initiation of breastfeeding were strong and statistically significant. The strongest predictor was having breastfed a previous infant, followed by having been breastfed oneself (Exhibit 6.4). Among women with previous breastfeeding experience, more than three-quarters initiated breastfeeding with the infant born during the study, compared to 51 percent of women who had no prior breastfeeding experience. Comparable patterns were noted for the other three exposure variables.

Even after controlling for personal characteristics, as described in the preceding section, all four of the breastfeeding exposure measures were positively associated with the initiation of breastfeeding. The strongest predictors continued to be having previously breastfed a baby oneself and having been breastfed as an infant (data not shown). These data suggest that women who have little or no prior experience with or exposure to breastfeeding may be good targets for breastfeeding promotion efforts.

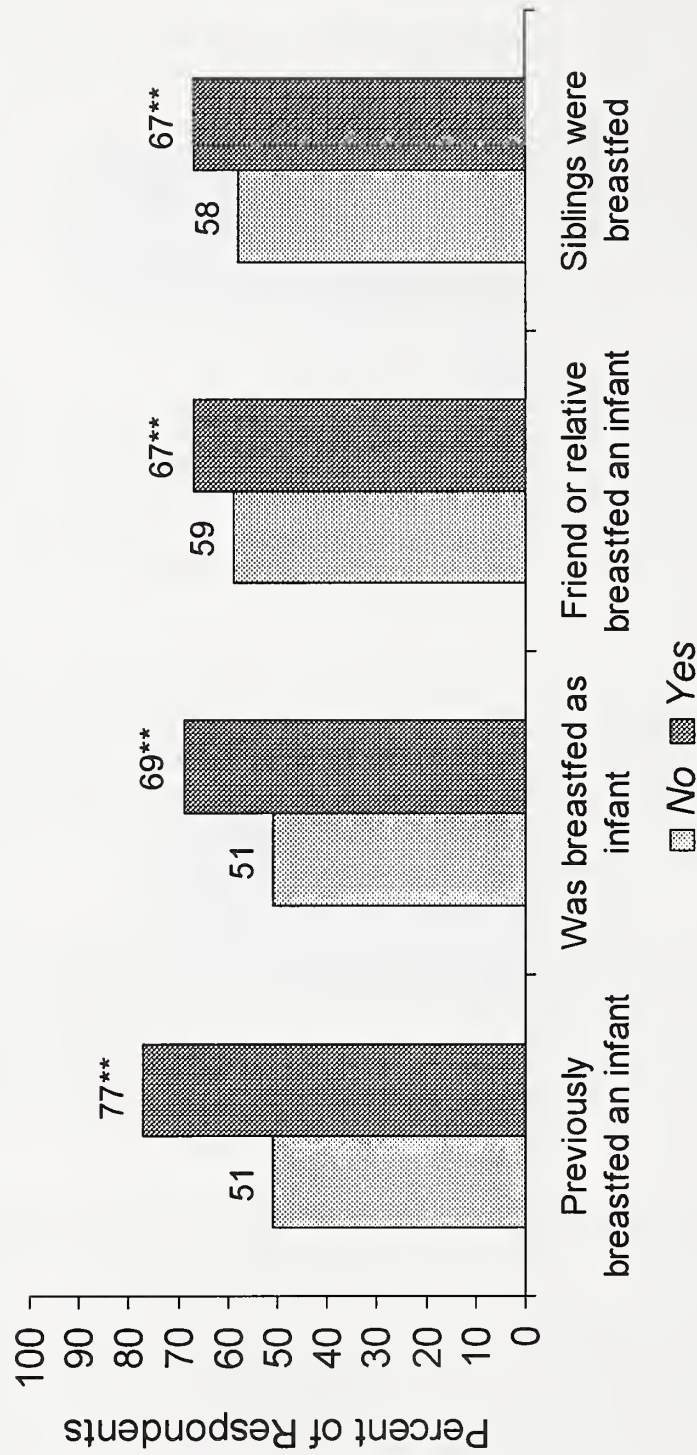
Influence of Social Support on Behaviors During Pregnancy

The analyses reported in this section assessed the influence of social support on adoption of desired health behaviors during pregnancy. Lack of support from a spouse, family members, or friends may make it difficult to follow recommended eating guidelines or to curb or eliminate use of cigarettes and alcohol. Health programs often try to minimize the negative impact of poor or inadequate social support by reaching out, to the extent possible, to participants' significant others. For example, Southeast Site 2 offered a special class for spouses or partners of women who were interested in breastfeeding.

Social support can be measured in a number of different ways. In this study, the baseline interview included a question about whether anyone in the respondent's life had or might make it difficult to

Exhibit 6.4

Breastfeeding Initiation by Previous Breastfeeding Exposure



Note: Includes women who breastfed for any length of time.

**Difference is statistically significant at the .01 level.

change specific health-related behaviors (eating well during pregnancy, reducing or eliminating cigarette smoking, and reducing or eliminating alcohol consumption).

Negative social support was most problematic in the area of cigarette smoking. Almost one-quarter of the women who reported cigarette use prior to pregnancy reported that someone in their life had or might make it difficult for them to cut down or quit smoking. This problem was especially prevalent in Midwest Site 2, where almost one-third of the smokers reported negative social support for behavior change. Ten percent of all women indicated that their efforts to eat well during pregnancy might be compromised by lack of appropriate social support and fewer than six percent of the respondents who reported use of alcohol reported negative social support for behavior change. Reports of non-support in both of these areas were also notably high in Midwest Site 2.

To test whether the presence of negative social support influenced women's behaviors, other things being equal, several regression models were run using the following measures as dependent variables:

- use of cigarettes during pregnancy;
- use of alcohol during pregnancy; and
- daily consumption of selected WIC and non-WIC foods: milk; 100% fruit juice; fruits and vegetables; fried foods; sweets; and snack foods.

Separate analyses were run for prenatal and postpartum data. Analyses related to use of cigarettes and alcohol included only respondents who reported engaging in these behaviors prior to pregnancy. Sample sizes for these regressions were between 600 and 700.

No significant relationships were detected between the presence of negative social support and any of the dietary behavior variables. In fact, for four of the five variables, the direction of the relationship, although not statistically significant, was the opposite of what was anticipated. That is, respondents who reported negative social support tended to drink more milk and fruit juice and eat fewer sweets and snack foods.

In contrast, the presence of negative social support for positive behaviors related to use of cigarettes and alcohol was associated with an increase in both of these behaviors. That is, the presence of negative social support was associated with both the likelihood of continued smoking during pregnancy and the number of cigarettes smoked at the time of the prenatal interview. A comparable relationship was observed for alcohol use. These data indicate that women's efforts to decrease or eliminate use of cigarettes and alcohol during pregnancy may be undermined by lack of support from significant others. Efforts to decrease these behaviors among WIC participants may be enhanced if the understanding and support of women's spouses, partners, and significant family members is solicited.

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APPENDIX A

PRENATAL SURVEY

Note: Baseline survey was essentially the same as the prenatal survey except that it included items on background characteristics and did not include items regarding WIC experiences and satisfaction. Postpartum survey did not include items on breastfeeding attitudes and included items on infant feeding.



FIRST POSTTEST MATERNAL QUESTIONNAIRE

Start Date _____ Time: ____:____

INTRODUCTION:

Hello, my name is _____, with Abt Associates. How are you? [WAIT FOR RESPONSE, IF NEEDED, PROBE WITH FOLLOWING STATEMENT, How are you getting along with your pregnancy?] [IF RESPONDENT STATES A MISCARRIAGE OR ABORTION HAS OCCURRED, GO TO END3. IF RESPONDENT STATES THAT BABY HAS BEEN BORN, GO TO Q.G9. OTHERWISE, CONTINUE.]

As you may remember we are conducting a study on behalf of the Department of Agriculture, Food and Nutrition Services (FNS) about the WIC Program. It is time for your second interview. I would like to talk to you about your pregnancy, your health and eating habits and your experiences with the WIC clinic.

To thank you for this interview, I have a gift for you. [INTERVIEWER, IF INTERVIEW IS BY PHONE, SAY "I will send this gift after we have completed the interview today. You should receive it in about a week."]

Just as before, the information that you provide in this interview is strictly confidential. It will only be used for research purposes. Your participation is completely voluntary. Neither your participation, nor answers will affect your participation in the WIC Program or any other program. Your answers will not be discussed with the WIC staff.

The interview will take a little over thirty-five minutes to complete. As we go through the interview, you may chose not to answer any question. Feel free to ask me questions at any time too.

We really appreciate your time and help with this study. O.K, let's begin.

PERSONAL CHARACTERISTICS:

A1. First, I would like to verify the spelling of your first, last and middle name. How do you spell your first name? How do you spell your last name? And your middle name?

FIRST _____

LAST _____

MIDDLE NAME _____

A2. When is your baby due?

[INTERVIEWER: IF R DOES NOT KNOW DAY, ENTER 15. YOU MUST OBTAIN MONTH AND YEAR!]

| _____ | _____ | _____ |
MONTH DAY YEAR

A3. Where do you plan to deliver this baby?

HOSPITAL NAME: _____

REF 7

DK 8

A4. Since we last talked on [PRELOAD DATE], have you seen a doctor, nurse or nurse midwife about this pregnancy?

YES 1

NO 2

REF 7

■ (GO TO A5)

■ (GO TO A5)

A4.a How many times have you seen a doctor, nurse or nurse midwife about this pregnancy?

[INTERVIEWER: IF NECESSARY USE CALENDAR TO HELP GUIDE NUMBER OF TIMES, BUT DO NOT "SUGGEST" NUMBER]

| _____ | _____ | # OF TIMES

A5. Next, I would like to ask a few questions about the people who live with you. How many adults live with you now, not including yourself?

[INTERVIEWER: THIS **DOES NOT** INCLUDE ADULTS WHO TEMPORARILY "STAY" AT HOUSE OVER NIGHT, EVEN ON A REGULAR BASIS. ADULTS ARE 18 YEARS AND OLDER. IF R LIVES IN SHELTER ENTER 95. IF R IS HOMELESS, ENTER 96 REF = 97, DK = 98]

| _____ | _____ | # of ADULTS

A6. How many children live with you now?

[INTERVIEWER: THIS **DOES NOT** INCLUDE CHILDREN WHO TEMPORARILY "STAY" AT HOUSE OVER NIGHT, EVEN ON A REGULAR BASIS. CHILDREN ARE 17 YEARS AND YOUNGER REF = 97, DK = 98.]

| _____ | _____ | # of CHILDREN

[SHOWCARD]

- A7. Currently, are you, single and never been married, married or living with a partner, divorced, separated or widowed?

SINGLE, NEVER BEEN MARRIED	1
MARRIED/LIVING WITH A PARTNER	2
DIVORCED	3
LEGALLY SEPARATED	4
WIDOWED	5
REF	7
DK	8

- A8. Next, I would like to ask you some questions about your sources of income. Are you currently working at a job for pay?
[IF R STATES SHE HAS MORE THAN ONE JOB USE THE TERM "these jobs". DO NOT PROBE FOR THIS INFORMATION.]

YES	1	
NO	2	■ (GO TO A9)
REF	7	■ (GO TO A9)
DK	8	■ (GO TO A9)

- A8.a On average, how many hours a week do you work at (this job/these jobs)?
[INTERVIEWER: IF R HAS MORE THAN ONE JOB, THIS IS TOTAL NUMBER OF HOURS WORKED FOR ALL JOBS. REF = 97, DK = 98]

| _____ | _____ | HOURS

- A9. Are you or anyone in your household currently receiving AFDC, welfare, general assistance or general relief?
[INTERVIEWER: HOUSEHOLD INCLUDES: A5 # OF ADULTS AND A6 # OF CHILDREN.]

YES.	1
NO	2
REF	7
DK	8

- A10. Are you or anyone in your household currently receiving food stamps?
[INTERVIEWER: HOUSEHOLD INCLUDES: A5 # OF ADULTS AND A6 # OF CHILDREN.]

YES	1
NO	2
REF	7

[SHOWCARD]

A11. Now I would like to ask you about your household's total income for last month, this would be (MONTH). This includes income for all people in your home including you. If you or someone in your household had a job, I would like you to include those earnings **BEFORE** taxes and other deductions were taken out. We're asking about gross pay, **NOT**, take-home pay. Please consider all sources of income, including jobs, social security, supplemental security, AFDC, food stamps, Unemployment Insurance, alimony, child support, etc. Tell me the number that is closest to your household's total income for (MONTH).

[INTERVIEWER--THIS IS BEFORE TAXES AND BEFORE ANY OTHER DEDUCTIONS. HOUSEHOLD INCLUDES: A5 # OF ADULTS AND A6 # OF CHILDREN. IF NECESSARY, READ: "Your answer to this question will in no way affect your eligibility for WIC. The WIC staff will never see your answers to this question or any other question".]

Less than \$250	01
\$ 251 - \$ 500	02
\$ 501 - \$ 750	03
\$ 751 - \$ 1,000	04
\$ 1,001 - \$ 1,250	05
\$ 1,251 - \$ 1,600	06
\$ 1,601 - \$ 2,500	07
\$ 2,501 - \$ 3,500	08
\$ 3,501 - \$ 5,000	09
Over \$ 5,000	10
REF	97
DK	98

EXPERIENCES WITH WIC/CLIENT SATISFACTION

B1. Now I'd like to talk about your experiences and satisfaction with WIC since [PRELOAD DATE]. Are you, personally, still receiving WIC benefits at [PRELOAD DELIVERY SITE NAME]?

YES	1	➡ (GO TO B2)
NO	2	
REF	7	➡ (GO TO B2)
DK	8	➡ (GO TO B2)

B1.a When did you stop receiving WIC benefits at [PRELOAD DELIVERY SITE NAME]?
[INTERVIEWER: IF R DOES NOT KNOW DAY ENTER 15, PROBE FOR MONTH AND YEAR. REF = 97, DK = 98]

_____	_____	_____
MONTH	DAY	YEAR

B1.b Are you receiving WIC benefits at a different location now?

YES	1	
NO	2	➡ (GO TO B2)
REF	7	➡ (GO TO B2)
DK	8	➡ (GO TO B2)

B1.c Where are you receiving WIC benefits now? What is the name of the clinic? What is the street address?

Name _____

Address _____

B1.d When did you start receiving WIC benefits at this clinic?
[INTERVIEWER: IF R DOES NOT KNOW DAY ENTER 15, PROBE FOR MONTH AND YEAR. REF = 97, DK = 98]

_____	_____	_____
MONTH	DAY	YEAR

As you know, there are many different reasons to go to the WIC clinic. Some of these include going in to pick up vouchers, to meet with a nutritionist or other staff member, to attend a class and to certify a child. We would like to know about all of your visits since [PRELOAD DATE].

[INTERVIEWER, ASK B2.E IF R HAS CHILDREN LIVING WITH HER NOW. FOR NUMBER OF TIMES, REF = 97 AND DK = 98.]

B2. In thinking about all of your contacts with WIC staff, have you...

	YES	NO	REF	DK	# of times?
B2.a Picked up (vouchers/coupons/checks)?	1	2	7	8	
B2.b Talked one-on-one with a nutritionist?	1	2	7	8	
B2.c Talked one-on-one with another WIC staff member about nutrition?	1	2	7	8	
B2.d Attended a class?	1	2	7	8	
[IF APPLICABLE] B2.e Certified/or recertified a child?	1	2	7	8	
B2.f Gone in for any other reason? (Why have you gone to the WIC clinic?)	1	2	7	8	

B3. How many times has someone else picked up your (vouchers/coupons/checks) for you?

[INTERVIEWER: REF = 97, DK = 98]

| _____ | _____ | # OF TIMES

- B4. Have the WIC staff given you any of the following information or advice? Have they talked to you about...

	YES	NO	N/A	REF	DK
WIC FOODS/DIETARY ISSUES					
How to use WIC (coupons/vouchers/checks)?	1	2	3	7	8
Which foods you can get with WIC (coupons/vouchers/checks)?	1	2	3	7	8
The types and amounts of food you should eat while pregnant?	1	2	3	7	8
How to get more halite in your diet?	1	2	3	7	8
PRENATAL ISSUES					
The importance of seeing a doctor or nurse regularly when you are pregnant?	1	2	3	7	8
How much weight you should gain while pregnant?	1	2	3	7	8
How to stop or reduce problems you may have when you are pregnant? These problems could include such things as nausea, vomiting, heartburn and constipation.	1	2	3	7	8
Importance of talking to a doctor before taking any over-the-counter or prescription medication during pregnancy?	1	2	3	7	8
Effect of alcohol, smoking, caffeine and other drugs on the unborn baby?	1	2	3	7	8
The importance of taking prescribed vitamin and mineral pills while pregnant?	1	2	3	7	8
Which chewing gums to avoid while pregnant?	1	2	3	7	8
The benefits of breastfeeding?	1	2	3	7	8
POSTPARTUM AND INFANT FEEDING ISSUES					
What to eat while breastfeeding?	1	2	3	7	8
The importance of drinking a lot of fluids while breastfeeding?	1	2	3	7	8
The importance of glucose in your diet while breastfeeding?	1	2	3	7	8
Tips for dealing with typical breastfeeding problems such as sore nipples, babies who won't suck and planning breastfeeding around normal activities?	1	2	3	7	8
The importance of iron-fortified formula?	1	2	3	7	8
When to start feeding babies solid foods?	1	2	3	7	8
That you should not lay baby down with a bottle?	1	2	3	7	8
The breastfeeding support services available at WIC?	1	2	3	7	8
Any other issues? (Specify)	1	2	3	7	8

[SHOWCARD]

B5. Thinking about all of your experiences at WIC, since [PRELOAD DATE], please tell me whether you agree or disagree with the following statements. Do you strongly agree, agree, disagree or strongly disagree?

	Strongly Agree	Agree	Disagree	Strongly Disagree	REF	DK
The staff was helpful	1	2	3	4	7	8
The staff made me wait too long	1	2	3	4	7	8
I was respected as an individual	1	2	3	4	7	8
Things were explained in a way that I could understand	1	2	3	4	7	8
The staff was warm and friendly	1	2	3	4	7	8
My questions were answered	1	2	3	4	7	8
I felt satisfied when I left the WIC clinic	1	2	3	4	7	8
I felt confused when I left the WIC clinic	1	2	3	4	7	8
Some of the advice I received from WIC was different than the advice my doctor gave me	1	2	3	4	7	8
The counselors helped me decide how to feed my baby	1	2	3	4	7	8
The information was tailored to my individual needs	1	2	3	4	7	8
The information was helpful	1	2	3	4	7	8

B6. Did you read all, most, some or none of the materials that were given to you by the WIC clinic?

ALL	1	
MOST	2	
SOME	3	
NONE	4	➤(GO TO B7)
DID NOT RECEIVE ANY HANDOUTS	5	➤(GO TO B7)
REF	7	➤(GO TO B7)
DK	8	➤(GO TO B7)

B6.a How useful were the pamphlets that you received from WIC for your own personal needs? Were they extremely useful, somewhat useful, useful, not very useful or completely useless?

- EXTREMELY USEFUL 1
- SOMEWHAT USEFUL 2
- USEFUL 3
- NOT VERY USEFUL 4
- COMPLETELY USELESS 5
- REF 7
- DK 8

B7. Was there anything you would have liked to discuss with a nutritionist or other WIC staff member but didn't?

- YES 1
- NO 2 ☐ (GO TO B8)
- REF 7 ☐ (GO TO B8)
- DK 8 ☐ (GO TO B8)

B7.a Please tell us what you would have liked to talk about. [VERBATIM IN ENGLISH]

B7.b Why didn't you talk about it? [VERBATIM IN ENGLISH]

B8. Did WIC staff refer you to any programs or services?

- YES 1
- NO 2 ☐ (GO TO B9)
- REF 7 ☐ (GO TO B9)
- DK 8 ☐ (GO TO B9)

B8.a To which programs or services were you referred? Where else?

[INTERVIEWER: CODE ALL THAT APPLY. IF R REFUSES OR DOESN'T KNOW THE PLACES SHE WAS REFERRED CODE 7 OR 8 IN FIRST ROW. ASK, " Did you go?" FOR EACH PLACE THEY STATE.]

REFERRAL	YES was referred	Did you go?				REF	DK
		YES	NO	REF	DK		
AFDC	1	1	2	7	8	7	8
AIDS TESTING, COUNSELING, TREATMENT	1	1	2	7	8		
COUNSELING FOR SMOKING, ALCOHOL, DRUGS	1	1	2	7	8		
DAY CARE/CHILD CARE	1	1	2	7	8		
DENTAL CARE	1	1	2	7	8		
EFNEP	1	1	2	7	8		
ENGLISH AS A SECOND LANGUAGE OR THE GED	1	1	2	7	8		
FAMILY COUNSELING AND CRISIS INTERVENTION	1	1	2	7	8		
FAMILY PLANNING	1	1	2	7	8		
FOOD PANTRY/FOOD BANK	1	1	2	7	8		
FOOD STAMPS	1	1	2	7	8		
HEAD START OR OTHER CHILD DEVELOPMENT PROGRAMS	1	1	2	7	8		
HOUSING ASSISTANCE	1	1	2	7	8		
IMMUNIZATIONS	1	1	2	7	8		
JOB TRAINING	1	1	2	7	8		
LA LECHE LEAGUE OR OTHER BREASTFEEDING SUPPORT PROGRAM	1	1	2	7	8		
LAMAZE OR OTHER CHILDBIRTH CLASS	1	1	2	7	8		
LEGAL AID	1	1	2	7	8		
MEDICAID	1	1	2	7	8		
MEDICAL DOCTOR FOR ROUTINE MEDICAL CARE	1	1	2	7	8		
NUTRITION COUNSELING OUTSIDE OF WIC	1	1	2	7	8		
PRENATAL CARE	1	1	2	7	8		
WELL BABY OR CHILD HEALTH CARE	1	1	2	7	8		
WIC REGISTERED DIETITIAN	1	1	2	7	8		
WIC REGISTERED NURSE	1	1	2	7	8		
OTHER (Specify)	1	1	2	7	8		

B9. Now I would like to know the top three things you like best about WIC. What is the first thing? The second? The third?

[INTERVIEWER: ENTER 98 FOR REMAINING BLANK ANSWERS.]

REASON #1:			CODE
REASON #2:			CODE
REASON #3:			CODE

NOTHING IN PARTICULAR	00
FREE FOOD/VOUCHERS	01
VOUCHERS ARE EASY TO USE	02
FREE FORMULA	03
EASY TO QUALIFY/RECEIVE WIC	04
PROXIES CAN GET VOUCHERS	05
CAN CHOOSE APPOINTMENT TIME	06
TALKING TO THE NUTRITIONIST	07
TALKING TO OTHER WIC STAFF	08
MAKES ME FEEL LIKE SOMEONE CARES	09
CHECKING MY WEIGHT/IRON	10
CHECKING CHILD'S WEIGHT/IRON	11
LEARN HOW TO PREPARE MEALS/RECIPES	12
LEARN ABOUT EATING HEALTHY	13
LEARN HOW TO PREPARE FORMULA	14
LEARN ABOUT BREASTFEEDING	15
LEARN WHEN BABY STARTS SOLID FOODS	16
PAMPHLETS	17
CLASSES (Which one?)	18
<hr/>	
VIDEOS (Which one?)	19
<hr/>	
OTHER (Specify)	20
<hr/>	
REF	97
DK	98

B10. Now I would like to know the top three things you dislike about WIC. What is the first? The second? The third?
 [INTERVIEWER: ENTER 98 FOR REMAINING BLANK ANSWERS.]

REASON #1:	REASON #2:	REASON #3:	CODE

NOTHING IN PARTICULAR	00
QUALITY/TYPE OF THE WIC FOODS	01
TOO MUCH OR TOO LITTLE OF AN ITEM	02
AMOUNT OF FOOD ON EACH VOUCHER	03
STAFF ATTITUDES	04
STAFF KNOWLEDGE ABOUT NUTRITION	05
TOO LONG OF WAIT	06
STRICT APPOINTMENT SCHEDULES	07
LACK OF TRANSPORTATION	08
PAMPHLETS	09
CLASSES (Which one?)	10
<hr/>	
VIDEOS (Which one?)	11
<hr/>	
OTHER (Specify)	12
<hr/>	
REF	97
DK	98

[IF RESPONDENT HAS ATTENDED A CLASS, ASK B11-11.a ELSE GO TO B12]

B11. What topics were covered in the class(es) you attended? (What else?)
 [INTERVIEWER: CODE ALL THAT APPLY]

EATING HEALTHY DURING PREGNANCY	01
GETTING IRON INTO DIET/IRON RICH FOODS	02
STRETCHING THE FOOD DOLLAR	03
RECIPES/HOW TO PREPARE MEALS	04
SMOKING CESSATION	05
WEIGHT CONTROL DURING PREGNANCY	06
WEIGHT GAIN DURING PREGNANCY	07
BREASTFEEDING	08
SELF ESTEEM/PERSONAL GROWTH	09
CHILD DISCIPLINE/REARING	10
INFANT FEEDING	11
OTHER (Specify)	12
<hr/>	
REF	97
DK	98

B11.a In general how interesting was/were this/these class(es) to you? Was/were the class(es) very interesting, interesting, somewhat interesting, somewhat boring, boring or very boring? [INTERVIEWER, IF MORE THAN ONE CLASS WAS ATTENDED, PROBE WITH "On the whole..."]

VERY INTERESTING	1
INTERESTING	2
SOMEWHAT INTERESTING	3
SOMEWHAT BORING	4
BORING	5
VERY BORING	6
REF	7
DK	8

B12. Did you learn anything from WIC that you did not know before you visited the WIC office?

YES	1	
NO	2	➤ (GO TO B13)
REF	7	➤ (GO TO B13)

B12.a What did you learn from WIC that you did not know before you came in?
[VERBATIM IN ENGLISH]

B13. Do you have any suggestions on how WIC could improve the way they provide information on healthy eating?

YES	1	
NO	2	➤ (GO TO C1)
REF	7	➤ (GO TO C1)

B13.a How do you think WIC could improve the way they provide information on healthy eating?
[VERBATIM IN ENGLISH]

BEHAVIOR

[SHOWCARD]

C1. Next, I'd like to ask you a few questions about the foods you eat. I'm going to ask you how often you eat certain foods. When answering think about your *usual* diet *over the past four weeks*. For each food I mention, please tell me whether you ate it once or twice during the past four weeks, once or twice a week, three times a week, once a day, two times a day or three or more times a day. If you never ate or drank a food I mention, just tell me. Here is a showcard with the number of times listed. What about _____? How often did you eat/drink _____ in the last four weeks?

[INTERVIEWER: IT IS VITAL THAT WE OBTAIN ACCURATE DATA FOR THIS QUESTION. DO NOT "RUSH" THIS QUESTION. PROBE FOR PER DAY, PER WEEK.]

Food Item/ Food Group	Never (0 ×s)	1-2 ×s a month	1-2 ×s a week	3×s a week or more (not everyday)	1× a day	2 ×s a day	3 or more ×s a day	REF	DK
Milk	0	1	2	3	4	5	6	7	8
Cheese	0	1	2	3	4	5	6	7	8
Eggs	0	1	2	3	4	5	6	7	8
Tuna fish	0	1	2	3	4	5	6	7	8
Beef, pork, veal, chicken, or fish that is not fried This also does not include tuna fish.	0	1	2	3	4	5	6	7	8
Fried foods such as fried chicken, fish, pork, or french fries	0	1	2	3	4	5	6	7	8
Peanut butter	0	1	2	3	4	5	6	7	8
100% Fruit juice (not including Kool-aid or fruit drinks)	0	1	2	3	4	5	6	7	8
Regular (not diet) soda or pop, Kool-aid, Hawaiian Punch or other fruit drinks that are not 100% fruit juice	0	1	2	3	4	5	6	7	8
Fruit, fresh, frozen or canned	0	1	2	3	4	5	6	7	8
Vegetables, excluding beans, peas or lentils. These can be fresh, frozen, canned or dried.	0	1	2	3	4	5	6	7	8
Beans or peas (such as pinto, kidney, black- eye, white, etc) or lentils These can be fresh, frozen, canned or dried.	0	1	2	3	4	5	6	7	8
Any of the following breakfast cereals (READ LIST OF WIC CEREALS) This would be both hot and ready-to-eat cereals.	0	1	2	3	4	5	6	7	8
Cookies, cakes, or pastries	0	1	2	3	4	5	6	7	8
Candy of any type	0	1	2	3	4	5	6	7	8
Snacks such as chips, pretzels, packaged popcorn	0	1	2	3	4	5	6	7	8
Beer, wine or mixed drink	0	1	2	3	4	5	6	7	8

- C2. Sometimes when women become pregnant, they change their eating habits. Next, I'd like to talk about whether your eating habits have changed since [PRELOAD DATE]. Would you say that your overall appetite has remained the same, increased, or decreased [PRELOAD DATE]?
[INTERVIEWER: APPETITE IS DEFINED AS HOW MUCH SHE DESIRES TO EAT NOT HOW MUCH SHE ACTUALLY CONSUMES.]

REMAINED THE SAME	1
INCREASED	2
DECREASED	3
REF	7
DK	8

- C3. Are you taking any special iron pills for this pregnancy? This would be an iron only pill.
[INTERVIEWER: WE ARE REFERRING TO A PILL SPECIFICALLY FOR IRON ONLY, NOT A PILL THAT CONTAINS BOTH VITAMINS AND IRON.]

YES	1	
NO	2	■ (GO TO C4)
REF	7	■ (GO TO C4)
DK	8	■ (GO TO C4)

- C3.a How often do you usually take these iron pills for this pregnancy? Do you take them every day, about three times a week, once a week or less than once a week?

EVERY DAY	1
3 TIMES A WEEK	2
ONCE A WEEK	3
LESS THAN ONCE A WEEK	4
REF	7
DK	8

- C4. Are you taking any special vitamin pills for this pregnancy?
[INTERVIEWER: "SPECIAL" MEANS THAT R WAS NOT TAKING IT BEFORE SHE BECAME PREGNANT. THESE PILLS MAY OR MAY NOT INCLUDE IRON AND MAY OR MAY NOT BE PRESCRIBED BY A DOCTOR. PILLS ARE AKA "PRENATAL VITAMIN PILLS."]

YES	1	
NO	2	■ (GO TO D1)
REF	7	■ (GO TO D1)
DK	8	■ (GO TO D1)

C4.a How often do you usually take these pills for this pregnancy? Do you take them every day, about three times a week, once a week or less than once a week?

EVERY DAY 1
 3 TIMES A WEEK 2
 ONCE A WEEK 3
 LESS THAN ONCE A WEEK 4
 REF 7
 DK 8

KNOWLEDGE

One of the most important goals of the WIC Program is to provide you with information about healthy eating habits for pregnancy. The next few questions are about your thoughts and opinions about eating during pregnancy.

D1. First, we would like to get an idea about how much you feel you already know about healthy eating habits for pregnancy. Would you say that you already know almost nothing, a little, some or a lot?

ALMOST NOTHING 1
 A LITTLE 2
 SOME 3
 A LOT 4
 REF 7
 DK 8

D2. Have you learned about healthy eating habits during this pregnancy from any of the following?

	YES	NO	DK	NA
A doctor?	1	2	8	9
A nurse or midwife?	1	2	8	9
A health clinic?	1	2	8	9
Food stamp program?	1	2	8	9
Head Start?	1	2	8	9
Other programs you are in because you are pregnant?	1	2	8	9
School?	1	2	8	9
Church?	1	2	8	9
Any place else that I have not mentioned? (Specify)	1	2	8	9

D3. Have you gotten information about healthy eating during this pregnancy on your own, for example, from...

	YES	NO	REF	DK
A book that you read?	1	2	7	8
A magazine or newspaper article that you read?	1	2	7	8
A TV show or video you watched?	1	2	7	8
A special class or lecture you attended?	1	2	7	8
Or some other place I have not mentioned? (Specify)	1	2	7	8

D4. Next, I am going to read you a set of statements. We are interested in your opinion.' Some of the statements are true and some are false. After I read each statement, please tell me whether you think the statement is true or false.

[INTERVIEWER: YOU CAN ONLY DEFINE THE TERMS IN THE INTERVIEWER INSTRUCTIONS, OTHERWISE ASK FOR BEST GUESS.]

	T	F	REF	DK
What you eat has nothing to do with whether you have anemia or low iron.	1	2	7	8
You should follow a strict schedule for feeding the baby when breastfeeding.	1	2	7	8
Alcohol, caffeine, and nicotine can pass from your blood into your breast milk and affect your baby.	1	2	7	8
It is ok for babies to drink regular or low-fat milk after the age of six months.	1	2	7	8
Breastfeeding for even one week is better for your baby than not breastfeeding at all.	1	2	7	8
Bread is a good source of vitamin C.	1	2	7	8
Breast milk can help protect babies from certain illnesses.	1	2	7	8
It is ok for babies to begin to eat solid foods, including cereal, at two months of age. This would include cereal in a bottle.	1	2	7	8
It is okay to lay a baby down with a bottle, as long as the bottle has milk or formula in it and not juice or soda. [INTERVIEWER: ALL INSTANCES OF BABY SLEEPING WITH A BOTTLE ARE INCLUDED, SUCH AS, NAPS IN A STROLLER OR PLAYPEN OR CAR SEAT, AS WELL AS NIGHTTIME SLEEPING IN CRIB.]	1	2	7	8
The food a woman eats during pregnancy can affect how healthy her new baby will be.	1	2	7	8
Breastfeeding mothers have to follow a special diet.	1	2	7	8
It is okay for a pregnant woman to take medicine without talking to a doctor as long as it is not a prescription drug. [FOR EXAMPLE, COUGH SYRUP, ASPIRIN]	1	2	7	8
Eating many small meals each day is better for your health than eating just one or two large meals.	1	2	7	8
If a woman is overweight, she should try to lose weight during pregnancy.	1	2	7	8
Giving a baby solid food helps him/her sleep through the night.	1	2	7	8
A mother who smokes only a few cigarettes a day throughout her pregnancy may harm her developing baby.	1	2	7	8
A baby should eat as many different types of food as soon as possible.	1	2	7	8
It is not safe to drink even one alcoholic drink (that is beer, wine, or liquor) while pregnant.	1	2	7	8

D5. Which of the following foods is the best source of iron?

Broccoli	1
Orange juice	2
Pinto Beans	3
Cheese	4
REF	7
DK	8

D6. Which of the following foods has the most calcium?

Tomatoes	1
Milk	2
Chicken	3
Whole wheat bread	4
REF	7
DK	8

D7. Which of the following foods is the best source of folic acid?

Spinach	1
Milk	2
Chicken	3
Grapefruit juice	4
REF	7
DK	8

ATTITUDES

E1. In general, would you say your health is excellent, very good, good, fair or poor?

EXCELLENT	1
VERY GOOD	2
GOOD	3
FAIR	4
POOR	5
REF	7
DK	8

E2. How healthy do you think your eating habits are? Are your eating habits very healthy, somewhat healthy, somewhat unhealthy or very unhealthy?

VERY HEALTHY	1
SOMEWHAT HEALTHY	2
SOMEWHAT UNHEALTHY	3
VERY UNHEALTHY	4
REF	7
DK	8

- E3. Considering how far along you are in this pregnancy, how do you feel about the weight you have gained? Would you say you have gained too much, gained too little, gained the right amount or have you lost weight?

GAINED TOO MUCH 1
 GAINED TOO LITTLE 2
 GAINED THE RIGHT AMOUNT 3
 LOST WEIGHT 4
 REF 7
 DK 8

[SHOWCARD]

- E4. Next, I am going to read a list of statements aloud and would like to know whether you agree or disagree with each statement. Please tell me whether you strongly agree, agree, disagree or strongly disagree with the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree	REF	DK
If I take a vitamin pill in the morning, I don't have to worry about what I eat.	1	2	3	4	7	8
The food I eat has nothing to do with how well I feel.	1	2	3	4	7	8
My health depends on how well I take care of myself.	1	2	3	4	7	8
I've been eating the same way for years and, at this point, it would be very difficult for me to change.	1	2	3	4	7	8
Healthy eating is a matter of common sense.	1	2	3	4	7	8
I feel best physically when I eat nutritious foods.	1	2	3	4	7	8
If I do not eat well my health will suffer.	1	2	3	4	7	8
Sometimes I eat foods that I like but I know they aren't good for me.	1	2	3	4	7	8
Sometimes I eat what everybody else is eating even if I know it is not good for me.	1	2	3	4	7	8

[SHOWCARD]

- E5. Certain situations make it hard to eat healthy. For each situation, please tell me whether you are definitely able to eat healthy, probably able to eat healthy, maybe, probably not or definitely not able to eat healthy. Here is a showcard with the response options listed. Are you able to eat healthy when...
 [INTERVIEWER: "DEFINITELY YES" MEANS THAT R WOULD DEFINITELY BE ABLE TO EAT HEALTHY WHEN SHE IS EATING OUT. TO HAVE "CRAVINGS" IS DEFINED AS "WHEN YOU REALLY WANT TO EAT A CERTAIN FOOD VERY, VERY MUCH; YOU CAN'T RESIST EATING THAT FOOD; YOU FEEL LIKE YOU MUST EAT IT; YOU HAVE TO HAVE IT".]

	Definitely Yes	Probably Yes	Maybe	Probably No	Definitely No	REF/ NA	DK
You are eating out?	1	2	3	4	5	7	8
You have no time to plan and prepare meals?	1	2	3	4	5	7	8
You are feeling stressed?	1	2	3	4	5	7	8
You are bored?	1	2	3	4	5	7	8
You have not eaten all day and are starving?	1	2	3	4	5	7	8
Someone else prepares your meals?	1	2	3	4	5	7	8
There are a lot of non-nutritious foods in the house?	1	2	3	4	5	7	8
You have strong cravings for certain foods?	1	2	3	4	5	7	8

- E6. Have you found it difficult to eat healthy during this pregnancy?

YES 1
 NO 2
 REF 7
 DK 8

➤(GO TO E7)
 ➤(GO TO E7)
 ➤(GO TO E7)

E6.a Now I would like to know the three main reasons it has been difficult for you to eat healthy during pregnancy. What is the first reason? The second reason? The third reason?
 [INTERVIEWER: ENTER 98 FOR REMAINING BLANK ANSWERS]

REASON #1:			CODE
REASON #2:			CODE
REASON #3:			CODE

TIME CONSTRAINTS:

NO TIME TO MAKE MEALS	01
POOR COOKING FACILITIES	02
NO COOKING FACILITIES	03

FAMILY/LIVING CONSTRAINTS:

COOKING MEALS FOR LARGE FAMILY	04
FAMILY DOESN'T EAT HEALTHY	05
SOMEONE ELSE PREPARES MEALS	06
NOT LIVING IN OWN HOME	07
OTHER HOUSEHOLD CHORES	08
HOUSEHOLD IS CHAOTIC	09
NO MONEY FOR FOOD	10

PERSONAL CONSTRAINTS:

NO LIKE COOKING/SHOPPING	11
DOESN'T KNOW HOW TO COOK	12
EATS OUT A LOT	13
LACKS TRANSPORT/STORE FAR AWAY	14
DOESN'T CARE ABOUT EATING HEALTHY	15
CRAVES JUNK FOOD	16
HEALTHY FOOD DOESN'T TASTE GOOD	17
NO KNOW WHAT "HEALTHY EATING" MEANS	18
TOO EASY TO EAT UNHEALTHY	19
HABIT EATING UNHEALTHY FOODS	20
MORNING SICKNESS	21
HAVE BEEN SICK LATELY	22
FOOD AVERSIONS/CHANGES IN APPETITE	23
OTHER (Specify)	24

REF	97
DK	98

E7. Of all the vegetables you have ever eaten, which is the one you dislike most?

ASPARAGUS	01
BEANS (ANY KIND)	02
BEETS	03
BROCCOLI	04
BRUSSEL SPROUTS	05
CABBAGE	06
CARROTS	07
CAULIFLOWER	08
CORN	09
LEEKs	10
LETTUCE (ANY KIND)	11
MUSHROOMS	12
OKRA	13
OLIVES	14
PEAS (ANY KIND)	15
PEPPERS (ANY KIND)	16
SPINACH	17
SPROUTS	18
SQUASH (ANY KIND)	19
TOMATOES	20
ZUCCHINI	21
OTHER (Specify)	22
<hr/>	
REF	97
DK	98

ALCOHOL

[SHOWCARD]

F1. Now please look at this card and tell me, on average, about how many alcoholic drinks you have you had each week since [PRELOAD DATE]?

More than 8 drinks a week	01
6-8 drinks a week	02
3-5 drinks a week	03
2 drinks a week	04
1 drink a week	05
2-3 drinks a month	06
1 drink a month	07
Less than one drink a month	08
None	09
REF	97
DK	98

CIGARETTES

F2. Have you smoked cigarettes at all since [PRELOAD DATE]?

YES	1
NO	2
REF	7

■(GO TO F4)

■(GO TO F4)

F2.a On the average, since [PRELOAD DATE], about how many cigarettes have you smoked per day, per week or per month?

[INTERVIEWER: IF ON-AGAIN, OFF-AGAIN SMOKER, PROBE FOR OVERALL AVERAGE.]

|_____|_____| # OF CIGARETTES

DAY	01
WEEK	02
MONTH	03
REF	97
DK	98

F3. Since [PRELOAD DATE], have you **stopped** smoking cigarettes for any period of time?

YES	1	
NO	2	■ (GO TO F4)
REF	7	■ (GO TO F4)
DK	8	■ (GO TO F4)

F3.a For how many days, weeks or months, since [PRELOAD DATE], have you stopped smoking cigarettes? [INTERVIEWER: THIS IS **TOTAL NUMBER OF DAYS, WEEKS OR MONTHS**. IF R IS ON-AGAIN, OFF-AGAIN SMOKER, ASK FOR TOTAL NUMBER.]

|_____|_____| # OF ...

DAYS	01
WEEKS	02
MONTHS	03
REF	97
DK	98

DRUGS

F4. Since [PRELOAD DATE], have you used any over-the-counter medication such as Tylenol, aspirin, cold or allergy medication?

YES	1	
NO	2	■ (GO TO G1)
REF	7	■ (GO TO G1)
DK	8	■ (GO TO G1)

F4.a How often did you ask your doctor about these medications before taking them? Did you ask him/her always, most of the time, sometimes, not very often or never?

ALWAYS	1
MOST OF THE TIME	2
SOMETIMES	3
NOT VERY OFTEN	4
NEVER	5
REF	7
DK	8

INFANT FEEDING ISSUES:

G1. Now I'd like to ask you some questions about feeding your baby. The last time we spoke, you were planning on [PRELOAD "breastfeeding" "formula feeding"] your baby. What are your current plans for feeding your baby? Are you planning to breastfeed only, breastfeed and formula feed or formula feed only? [INTERVIEWER: IF WOMAN IS UNDECIDED ATTEMPT TO FORCE A CHOICE BY ASKING, "If you **had** to choose today, how would you choose to feed your baby?]

ONLY BREASTFEEDING	1	<input type="checkbox"/> (GO TO G5)
FORMULA AND BREASTFEEDING .	2	<input type="checkbox"/> (GO TO G5)
ONLY FORMULA FEEDING	3	

G2. In making this decision, did you **consider** breastfeeding your baby?

YES	1
NO	2
REF	7
DK	8

G3. [IF "YES" TO G2, ASK, "Now I would like to know the top three reasons why are you choosing to formula-feed your baby rather than breastfeed your baby?" IF "NO" TO G2, ASK "Now I would like to know the top three reasons why you did not consider breastfeeding your baby?"] What is the first reason? The second reason? The third reason?

[INTERVIEWER: ENTER 98 FOR REMAINING BLANK ANSWERS]

REASON #1:			CODE
REASON #2:			CODE
REASON #3:			CODE

TIME/SUPPORT CONSTRAINTS

RETURN TO WORK/SCHOOL	01
OTHER FAMILY RESPONSIBILITIES	02
LACK SUPPORT OF FAMILY/SPOUSE	03
FATHER/FAMILY CAN NOT HELP	04
WILL TAKE TOO MUCH TIME	05
NO PERSONAL TIME	06
TOO TIRED, RUN DOWN	07
RESTRICT LIFESTYLE	08
JUST NOT PRACTICAL	09
NOT POSSIBLE IN PUBLIC PLACES	10

PERSONAL EMOTIONAL REASONS

NO INTEREST	11
RESTRICTS TYPES OF CLOTHING	12
CAN NOT EAT THE FOODS I LIKE	13
EMBARRASSING	14
FEEL SOCIALLY UNCOMFORTABLE	15
I JUST DON'T WANT TO	16

PERSONAL PHYSICAL REASONS

BREASTS ARE TOO SMALL	17
NO HOW TO BREASTFEED CORRECTLY	18
NO HOW TO USE A BREAST PUMP	19
TROUBLE EXPRESSING MILK	20
LEAKING	21
DISFIGURE MY BREASTS	22
PAINFUL	23
ADVISED BY DOCTOR	24

BABY

BABY WILL HAVE HEALTH PROBLEMS	25
DON'T KNOW HOW TO HOLD BABY	26
TROUBLE SUCKING	27
BABY WILL BE FUSSY	28
BABY WILL NOT GET ENOUGH MILK	29
BABY WON'T WANT BREAST	30
EASIER TO FEED BABY WITH BOTTLE	31
OTHER (Specify)	32

REF	97
DK	98

G4. Has a doctor or nurse advised you not to breastfeed?

YES 1
NO 2
REF 7

[GO TO G6]

G5. How long do you plan to breastfeed?

| _____ | _____ | NUMBER OF ...

DAYS 01
WEEKS 02
MONTHS 03
REF 97
DK 98

G5.a Have you changed the length of time you were planning to breastfeed since the last time we talked?

YES 1
NO 2 ☐ (GO TO G6)
REF 7 ☐ (GO TO G6)
DK 8 ☐ (GO TO G6)

G5.b Why did you decide to change the amount of time you are going to breastfeed?
[INTERVIEWER: TYPE IN EXACTLY WHAT R STATES. DO NOT ABBREVIATE.]

G6. Sometimes, people in your life can make it difficult for you to do the things you are trying to do. I'd like to know if there is anyone in your life who has or who might make it difficult for you to ...
[INTERVIEWER: ASK "Cut down or quit drinking alcohol", ONLY IF R IS DRINKING (F1). ASK "Cut down or quit smoking" ONLY IF R IS CURRENTLY SMOKING (F2).

	YES	NO	REF	DK
Eat well during pregnancy?	1	2	7	8
Formula feed your baby?	1	2	7	8
Breastfeed your baby?	1	2	7	8
Cut down or quit drinking alcohol?*	1	2	7	8
Cut down or quit smoking?*	1	2	7	8

[SHOWCARD]

G7. How strongly do you agree or disagree with the following statements? Please tell me whether you strongly agree, agree, somewhat agree, somewhat disagree, disagree or strongly disagree.

	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree	REF	DK
Bottle feeding increases the chances that baby will have colic.	1	2	3	4	5	6	7	8
Breastfeeding is a very convenient method of feeding baby.	1	2	3	4	5	6	7	8
Breastfeeding helps protect baby against infection.	1	2	3	4	5	6	7	8
Breastfeeding helps mother feel closer to baby.	1	2	3	4	5	6	7	8
Breastfeeding helps mother lose weight.	1	2	3	4	5	6	7	8
Bottle feeding provides incomplete nourishment for baby (baby does not get all he really needs).	1	2	3	4	5	6	7	8
Bottle feeding makes it easier for father or other family members to be involved in feeding baby.	1	2	3	4	5	6	7	8
Breastfeeding is embarrassing for the mother.	1	2	3	4	5	6	7	8
Breastfeeding makes it difficult for mother to go out.	1	2	3	4	5	6	7	8
It is difficult to breastfeed successfully.	1	2	3	4	5	6	7	8
Bottle feeding makes it easier for mother to go to work or school.	1	2	3	4	5	6	7	8
Breast milk is the best nourishment for baby.	1	2	3	4	5	6	7	8
Bottle feeding is an expensive method of feeding.	1	2	3	4	5	6	7	8
Bottle feeding is a trouble free method of feeding.	1	2	3	4	5	6	7	8
Bottle feeding allows one to see exactly how much milk baby has had.	1	2	3	4	5	6	7	8
Breastfeeding requires mother to watch what she eats and drinks.	1	2	3	4	5	6	7	8

[SHOWCARD]

G8. We all consider different factors when making decisions. I'm going to read you a list of factors women often think about when making their decision how to feed their babies. For each item I mention, please tell me how important the item is in your decision on how to feed your baby. The response categories are extremely important, very important, somewhat important, somewhat unimportant, not very important, not important at all. How important is it that the feeding method you choose...

	Extremely Important	Very Important	Somewhat Important	Somewhat Unimportant	Not Very Important	Not Important at all	REF	DK
Is convenient?	1	2	3	4	5	6	7	8
Helps protect baby against infection?	1	2	3	4	5	6	7	8
Helps you feel closer to baby?	1	2	3	4	5	6	7	8
Helps you lose weight?	1	2	3	4	5	6	7	8
Provides complete nourishment for baby?	1	2	3	4	5	6	7	8
Allows baby's father or other family member to be involved in feeding baby?	1	2	3	4	5	6	7	8
Does not make you feel embarrassed?	1	2	3	4	5	6	7	8
Allows you to go out socially?	1	2	3	4	5	6	7	8
Makes it easy for your go to work or school?	1	2	3	4	5	6	7	8
Is trouble-free?	1	2	3	4	5	6	7	8
Is inexpensive?	1	2	3	4	5	6	7	8
Allows you to see exactly how much milk baby has had?	1	2	3	4	5	6	7	8
Decreases the chance of getting colic?	1	2	3	4	5	6	7	8
Does not require that you watch what you eat or drink?	1	2	3	4	5	6	7	8



APPENDIX B

WIC RECORD ABSTRACTION FORM



WIC RECORD ABSTRACTION

PERSONAL / HEALTH DATA	
A1. Race/ethnicity	A2. Pregravid weight

PRENATAL WIC CONTACTS						
B1. Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
B2. Type of contact Circle All That Apply	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____ _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____ _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____ _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____ _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____ _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____ _____
B3. Provider(s) Circle All That Apply	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____
B4. Weight (lbs.) _____ <div style="text-align: right;">NA</div> (*Date, if different than above)	_____ <div style="text-align: right;">NA</div> * / /	_____ <div style="text-align: right;">NA</div> * / /	_____ <div style="text-align: right;">NA</div> * / /	_____ <div style="text-align: right;">NA</div> * / /	_____ <div style="text-align: right;">NA</div> * / /	_____ <div style="text-align: right;">NA</div> * / /
B5. Hematocrit (hct) _____% <div style="text-align: right;">NA</div> (*Date, if different than above)	_____% <div style="text-align: right;">NA</div> * / /	_____% <div style="text-align: right;">NA</div> * / /	_____% <div style="text-align: right;">NA</div> * / /	_____% <div style="text-align: right;">NA</div> * / /	_____% <div style="text-align: right;">NA</div> * / /	_____% <div style="text-align: right;">NA</div> * / /

Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
B6. Hemoglobin (hgb)						
	-----	-----	-----	-----	-----	-----
	NA	NA	NA	NA	NA	NA
(*Date, if different than above)						
	* / /	* / /	* / /	* / /	* / /	* / /
B7. Nausea +/- vomiting						
B8. Heartburn						
B9. Constipation						

NUTRITION EDUCATION TOPICS COVERED						
B10. WIC PROGRAM FOODS						
B10a. Logistics of WIC voucher issuance and use						
B10b. Identification of WIC foods						
B10c. Supplemental nature of WIC food package						
B10d. Rationale for WIC foods (major nutrients)						
B10e. Other (Specify): _____						
B11. DIET AND PREGNANCY						
B11a. Foods/nutrients low in participant's diet						
B11b. Recommended weight gain (total lbs. and/or lbs. per week or trimester)						
B11c. Participant's relative rate of weight gain						
B11d. Managing common problems of pregnancy (N&V, heartburn, constipation)						
B11e. Importance of adequate iron intake for prevention of anemia						
B11f. Importance of regular prenatal care						
B11g. Prenatal vit. and minl. supplement recommendations						
B11h. CONTRAINDICATIONS DURING PREGNANCY						
B11i. Effects of smoking						
B11j. Effects of alcohol and drugs						
B11k. Effects of caffeine						
B11l. Importance of consulting doctor prior to taking over-the-counter or prescription drugs						
B11m. Other (Specify): _____						

NUTRITION EDUCATION TOPICS COVERED (CONTINUED)

Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
B12. BREASTFEEDING						
B12a. Infant feeding preference						
B12b. Benefits of breastfeeding						
B12c. Management of common breastfeeding problems (e.g. sore nipples, engorgement, milk supply)						
B12d. Breastfeeding techniques/positions						
B12e. Breastfeeding in the hospital						
B12f. Breastfeeding support services/programs (e.g. La Leche League)						
B12g. Breast pumps						
B12h. Combining breastfeeding and bottle feeding						
B12i. Returning to work or school while breastfeeding						
B12j. Infant growth spurts and increased breastfeeding demand						
B12k. Nipple confusion						
B12l. Importance of ample fluids						
B12m. Effects of alcohol and other drugs on breastfed infant						
B12n. Importance of consulting doctor before taking any over-the-counter or prescription drugs						
B12o. AIDS/HIV and contraindication of breastfeeding						
B12p. Other (Specify): _____						
B13. INFANT FEEDING PRACTICES						
B13a. Infant's rate of growth						
B13b. Formula preparation and storage						
B13c. Infant bottle syndrome						
B13d. Infant/toddler growth and development						
B13e. Introduction of solid foods - timing and pattern						
B13f. Introduction of cup						
B13g. Iron fortified formula - rationale and importance						
B13h. Other (Specify): _____						

REFERRALS						
Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
B14a. AFDC						
B14b. AIDS testing, counseling, treatment						
B14c. Alcohol or drug cessation program						
B14d. Day care/child care						
B14e. Dentist						
B14f. EFNEP						
B14g. English as a second language or the GED						
B14h. Family counseling and crisis intervention						
B14i. Family planning/Planned Parenthood						
B14j. Food pantry/food bank						
B14k. Food Stamps						
B14l. Head Start or other child development program						
B14m. Healthy Start						
B14n. Housing assistance						
B14o. Immunizations						
B14p. Job training						
B14q. La Leche League or other breastfeeding support program						
B14r. Lamaze or other childbirth class						
B14s. Legal aid						
B14t. Medicaid						
B14u. Medical doctor for routine medical care						
B14v. Nutrition counseling (outside of WIC)						
B14w. Smoking cessation program						
B14x. Well baby clinic/child health care						
B14y. WIC RD/nutritionist						
B14z. WIC RN						
B14aa. Other (Specify): _____ _____ _____						

B15a. Additional Voucher Pick-ups	B15b. Dates of Additional Voucher Pick-ups 1.) / / 4.) / / 2.) / / 5.) / / 3.) / / 6.) / /
B16a. Additional WIC Nutrition Education Contacts	B16b. Dates of Additional Nutrition Education Contacts 1.) / / 4.) / / 2.) / / 5.) / / 3.) / / 6.) / /
B17a. WIC Termination Date / /	B17b. Reason for Termination (if terminated during pregnancy) 1. Miscarriage/abortion 2. Moving 3. Transfer to other WIC Program 4. Other (Specify) _____

PRENATAL RISK FACTORS					
C1.	MATERNAL AGE		C9.	PROBLEMS WITH PREV. PREGS.	
C1a.	Teen (younger than 17/18 years)		C9b.	Gestational hypertension (HTN)	
C1z.	Older than 35 years		C9b.	Gestational diabetes (DM)	
C2.	HEMATOLOGIC RISK		C9c.	Preeclampsia (toxemia)	
C2a.	Low hemoglobin (hgb)		C10.	MEDICAL CONDS. (CURRENT PREG.	
C2b.	Low hematocrit (hct)		C10b.	Major infection, infect. disease, AIDS	
C2c.	Anemia		C10b.	Surgery or fracture w/in past 3 months	
C4.	PREGRAVID WEIGHT		C10c.	Metabolic disorder	
C6a.	Underweight		C10n.	Cardiovascular disease	
C6z.	Overweight		C10e.	Renal disease	
C4.	PRENATAL WEIGHT GAIN		C10n.	Gastrointestinal disease	
C6a.	Weight loss		C10i.	Preeclampsia (toxemia)	
C4b.	Inadequate weight gain		C10n.	Congenital defect or birth injury	
C4b.	Excessive weight gain		C10i.	Burn (2nd or 3rd degree)	
C6.	INADEQUATE/INAPPROPRIATE DIET		C10n.	Nutrient deficiency syndrome	
C5b.	Inadequate dietary intake		C10k.	Eating disorder (anorexia, bulimia)	
C5b.	Not taking prenatal, iron, folacin suppl.		C10k.	Rx'd drugs that affect nutrient needs	
C5c.	Pica		C10m.	Lead poisoning	
C6.	SUBSTANCE ABUSE		C10n.	Allergy or food intolerance	
C6a.	Smoking		C10n.	Prior long-term oral contraceptive use	
C5b.	Alcohol		C10p.	Hypertension (HTN)	
C8c.	Drugs		C10q.	Gestational diabetes (DM)	
C7.	CONDS. AFFECTING DIETARY INTAKE		C10k.	Gestational hypertension (HTN)	
C7a.	Mental retardation		C11.	PARITY	
C6z.	Homelessness		C11a.	Short interconceptual period	
C8c.	Migrant		C11a.	High parity (5 or more pregnancies)	
C6.	NEG. OUTCOME OF PREV. PREG.		C11c.	Multiple births	
C6a.	Low birthweight infant			OTHER RISK FACTORS:	
C6z.	Small for gestational age infant		C12.	Breastfeeding	
C8c.	Premature infant		C13.	Placenta previa/abruptio (current preg.)	
C8d.	History of miscarriages, abortions		C14.	Prevent regression/regr. of nutr. status	
C8e.	Stillbirth		C15.	Transfer, no known risk	
C8f.	Infant death		C16.	Other (Specify): _____	
C8g.	Infant born with congenital defects				

DELIVERY AND CERTIFICATION DATES

D1. Delivery date

/ / NA

D2. Postpartum Certification Date

/ /

POSTPARTUM WIC CONTACTS

E1. Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
E2. Type of contact Circle All That Apply	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____	1 = Certification 2 = Followup 3 = Group 4 = Individual 5 = Newsletter 6 = Telephone 7 = Vouchers 8 = Other (Specify) _____
E3. Provider(s) Circle All That Apply	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____ _____	1 = RD 2 = Nutritionist 3 = Paraprof. 4 = Lactation Consultant 5 = RN 6 = Other (Specify) _____ _____ _____
E4. Weight (lbs.) _____ NA	_____ NA	_____ NA	_____ NA	_____ NA	_____ NA	_____ NA
(*Date, if different than above)	* / /	* / /	* / /	* / /	* / /	* / /
E5. Hematocrit (hct) _____ % _____ NA	_____ % _____ NA	_____ % _____ NA	_____ % _____ NA	_____ % _____ NA	_____ % _____ NA	_____ % _____ NA
(*Date, if different than above)	* / /	* / /	* / /	* / /	* / /	* / /
E6. Hemoglobin (hgb) _____ NA	_____ NA	_____ NA	_____ NA	_____ NA	_____ NA	_____ NA
(*Date, if different than above)	* / /	* / /	* / /	* / /	* / /	* / /

POSTPARTUM WIC CONTACTS

NUTRITION EDUCATION TOPICS COVERED

Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
E7. WIC PROGRAM FOODS						
E7a. Logistics of WIC voucher issuance/use						
E7b. Identification of WIC foods						
E7c. Supplemental nature of WIC food package						
E7d. Rationale for WIC foods (major nutrients)						
E7e. Other (Specify): _____						
E8. MOTHER'S DIET/HEALTH						
E8a. Recommended healthy diet (general)						
E8b. Foods/nutrients low in participant's diet						
E8c. Participant's current weight relative to IBW standards						
E8d. Weight loss/weight control plan						
E8e. Need for iron supplementation for at least 2 months postpartum						
E8f. Smoking/effect of second hand smoking on baby						
E8g. Importance of postpartum checkup with doctor						
E8h. Other (Specify): _____						
E9. INFANT FEEDING PRACTICES						
E9a. Infant's rate of growth						
E9b. Formula preparation and storage						
E9c. Infant bottle syndrome						
E9d. Infant/toddler growth and development						
E9e. Introduction of solid foods - timing and pattern						
E9f. Introduction of cup						
E9g. Iron fortified formula - rationale and importance						
E9h. Other (Specify): _____						

NUTRITION EDUCATION TOPICS COVERED

Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
E10. BREASTFEEDING						
E10a. Benefits of breastfeeding						
E10b. Management of common breastfeeding problems (e.g. sore nipples, engorgement milk supply)						
E10c. Breastfeeding techniques/positions						
E10d. Breastfeeding support services/ programs (e.g. La Leache League)						
E10e. Breast pumps						
E10f. Combining breastfeeding and bottle feeding						
E10g. Returning to work or school while breastfeeding						
E10h. Infant growth spurts/ increased breastfeeding demand						
E10i. Nipple confusion						
E10j. Importance of ample fluids						
E10k. Effects of alcohol and other drugs on breastfed infant						
E10l. Importance of consulting doctor before taking any over-the-counter or prescription drugs						
E10m. Effects of smoking on infant						
E10n. Effects of caffeine on infant						
E10o. AIDS/HIV and contraindication of breastfeeding						
E10p. Other (Specify): _____						

REFERRALS

Date (mm/dd/yy)	/ /	/ /	/ /	/ /	/ /	/ /
E11a. AFDC						
E11b. AIDS testing, counseling, treatment						
E11c. Alcohol or drug cessation program						
E11d. Day care/child care						
E11e. Dentist						
E11f. EFNEP						
E11g. English as a second language or the GED						
E11h. Family counseling and crisis intervention						
E11i. Family planning/Planned Parenthood						
E11j. Food pantry/food bank						
E11k. Food Stamps						
E11l. Head Start or other child development program						
E11m. Housing assistance						
E11n. Immunizations						
E11o. Job training						
E11p. La Leche League or other breastfeeding support program						
E11r. Legal aid						
E11s. Medicaid						
E11t. Medical doctor for routine medical care						
E11u. Nutrition (outside of WIC)						
E11v. Smoking cessation program						
E11w. Well baby clinic/child health care						
E11x. WIC RD/nutritionist						
E11z. WIC RN						
E11aa. Other (Specify): _____						

POSTPARTUM RISK FACTORS					
F1.	MATERNAL AGE		F8b.	Stillbirth or miscarriage (SAB)	
F1a.	Teen (younger than 17/18 years)		F9c.	Complications of delivery	
F1b.	Older than 35 years		F8d.	Fetal or infant death	
F2.	HEMATOLOGIC RISK		F8d.	Infant born with congenital defects	
F2a.	Low hemoglobin (hgb)		F9.	MEDICAL CONDS. (CURRENT PREG.)	
F2b.	Low hematocrit (hct)		F9a.	Major infection, infect. disease, AIDS	
F2c.	Anemia		F9a.	Surgery or fracture w/in past 3 months	
F2d.	Blood transfusion		F9c.	Metabolic disorder	
F3.	PREGRAVID or POSTPARTUM WEIGHT		F9d.	Cardiovascular disease	
F4a.	Underweight		F9e.	Renal disease	
F3b.	Overweight		F9f.	Gastrointestinal disease	
F4.	PRENATAL WEIGHT GAIN		F9g.	Congenital birth defect or birth injury	
F4a.	Weight loss		F9n.	Burn (2nd or 3rd degree)	
F4b.	Inadequate weight gain		F9i.	Nutrient deficiency syndrome	
F4c.	Excessive weight gain		F9j.	Eating disorder (anorexia, bulimia)	
F5.	INADEQUATE/INAPPROPRIATE DIET		F9d.	Rx'd drugs that affect nutrient needs	
F5a.	Inadequate dietary intake		F9l.	Lead poisoning	
F5b.	Not taking iron suppl. 2 mo. postpartum		F9f.	Allergy or food intolerance	
F5c.	Pica		F9n.	Hypertension	
F6.	SUBSTANCE ABUSE		F10.	PARITY	
F6a.	Smoking		F10b.	Short interconceptual period	
F6a.	Alcohol		F10b.	High parity (5 or more pregnancies)	
F6c.	Drugs		F10b.	Multiple births	
F7.	CONDS. AFFECTING DIETARY INTAKE			OTHER RISK FACTORS:	
F7a.	Mental retardation		F11.	Breastfeeding	
F7b.	Homelessness		F12.	WIC eligible as pregnant woman	
F7c.	Migrant		F13.	Prevent regression/regr. of nutr. status	
F8.	NEGATIVE PREGNANCY OUTCOME		F14.	Transfer, no known risk	
F8a.	Low birthweight, small for gest. age, or premature infant		F15.	Other (Specify): _____	

APPENDIX C

NUTRITION EDUCATION OBSERVATION FORMS



NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Prenatal Visit
 (continued)

ASSESSMENT DATA

	Obtained by WIC Staff	Self-report	Medical Record	Not Obtained	Not Applicable
24-hour recall					
Food frequency					
Current weight					
Prepregnancy weight					
Height					
Food likes/dislikes					
Allergies/intolerances					

TOPICS COVERED

	Assessed	Discussed	Written Material	Video	Not Covered
DIET AND PREGNANCY					
Foods/nutrients low in participant's diet					
Recommended weight gain (total lbs. and/or lbs. per week or trimester)					
Participant's relative rate of weight gain					
Managing common problems of pregnancy (N&V, heartburn, constipation)					
Importance of adequate iron intake for prevention of anemia					
Effects of smoking					
Effects of alcohol and drugs					
Effects of caffeine					
Importance of regular prenatal care					
Prenatal vitamin and mineral supplement recommendations					
Importance of consulting doctor prior to taking over-the-counter or prescription drugs					
Other (specify): _____ _____					

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Prenatal Visit

(continued)

	Assessed	Discussed	Written Material	Video	Not Covered
BREASTFEEDING					
Infant feeding preference					
Benefits of breastfeeding					
Management of common breastfeeding problems (e.g. sore nipples, engorgement, milk supply)					
Breastfeeding techniques/positions					
Breastfeeding in the hospital					
Breastfeeding support services/programs (e.g. La Leche League)					
Breast pumps					
Combining breastfeeding and bottle feeding					
Returning to work or school while breastfeeding					
Infant growth spurts and increased breastfeeding demand					
Nipple confusion					
Importance of ample fluids					
Effects of alcohol and other drugs on breastfed infant					
Importance of consulting doctor before taking any over-the-counter or prescription drugs					
AIDS/HIV and contraindication for breastfeeding					
Other (specify): _____ _____					

BREASTFEEDING PROMOTION	Yes	No	N/A
Counselor advocates breastfeeding			
Counselor remains supportive and non-judgmental if participant indicates preference for bottlefeeding			
Counselor investigates participant's beliefs about potential barriers to breastfeeding			
Counselor investigates family/friends support of breastfeeding			
Counselor addresses participant's concerns about breastfeeding in a supportive manner			

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Prenatal Visit

(continued)

WIC PROGRAM/FOODS	Assessed	Discussed	Written Material	Video	Not Covered
Logistics of WIC voucher issuance and use					
Identification of WIC foods					
Supplemental nature of WIC food package					
Rationale for WIC foods (major nutrients)					
Other (specify): _____ _____					

SPECIFIC RECOMMENDATIONS:

1. _____
2. _____
3. _____

4. _____
5. _____
6. _____

NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Prenatal Visit
 (continued)

EDUCATIONAL AIDS/MATERIALS

	Yes	No
Bulletin boards, flipcharts, posters		
Food packages		
Food demonstrations and/or tasting		
Videos		
Other (specify:) _____		

	No. Reviewed During Session	No. Provided to Take Home
Books		
Brochures, pamphlets, handouts		
Recipes		
Other written material (specify:) _____		

Participant was provided with written materials in appropriate language:

All 1
 Most 2
 Some 3
 None 4
 N/A 5

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Prenatal Visit

(continued)

VIDEOS (ONLY)

Title/Topic _____

Start Time |__|__| : |__|__|

End Time |__|__| : |__|__|

Participant was attentive to video:

Consistently 1
 Sometimes 2
 Rarely 3
 Never 4

Discussion of video was provided:

Yes 1
 No 2

ENVIRONMENT

Number of children present |__|

	Yes	No	N/A
Space is private enough so that others cannot easily overhear conversation			
Temperature is comfortable: not too warm or too cold			
Noise level is low enough that participants can converse easily without straining or distraction			
Toys or other activities are available for children			
Session is interrupted more than once by children			
Session is interrupted more than once by telephone or other clinic staff			

NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Prenatal Visit
 (continued)

REFERRALS

	Yes	No
AFDC		
AIDS testing, counseling, treatment		
Alcohol or drug cessation program		
Day care/child care		
Dentist		
EFNEP		
English as a second language or the GED		
Family counseling and crisis intervention		
Family planning/Planned Parenthood		
Food pantry/food bank		
Food Stamps		
Head Start or other child development program		
Housing assistance		
Immunizations		
Job training		
La Leche League or other breastfeeding support program		
Lamaze or other childbirth class		
Legal aid		
Medicaid		
Medical doctor for routine medical care		
Nutrition counseling (outside of WIC)		
Prenatal care		
Smoking cessation program		
Well baby clinic/child health care		
Other (specify): _____ _____		

NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Prenatal Visit
 (continued)

STAFF/PARTICIPANT INTERACTION

	Yes	No	N/A
Counselor provides positive feedback about current dietary intake			
Counselor discusses all risk factors			
Counselor investigates potential barriers to recommended behaviors			
Counselor investigates participant's willingness to make behavior changes			
Counselor investigates participant's understanding of a majority of key concepts			
Counselor works cooperatively with participant to negotiate goals for behavior change/improvement			
Counselor offers specific and appropriate ideas on how to implement most or all recommended behaviors			
Counselor provides opportunity for questions			
Participant asks questions or initiates line of discussion more than two times			
Counselor addresses participant's questions or concerns in a supportive manner			
Counselor maintains a non-judgmental attitude at all times			
<i>Only if Followup Visit: Counselor elicits information about specific behaviors with reference to goals identified in previous session</i>			

COMMENTS:

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session or Class -- Prenatal Visit

SESSION IDENTIFICATION

Site Code |__|__| Observer Code |__|

Date of Observation |__|__| |__|__| |__|__|
 Month Day Year

Start Time |__|__| : |__|__| End time |__|__| : |__|__|

Type of Visit Certification 1
 Followup 2

Group Risk Status High 1
 Low 2
 Combination 3

Provider Type Registered Dietitian 1
 Nutritionist (not RD) 2
 Paraprofessional 3
 Other (Specify) 4

Attendance

Expected attendance: |__|__|

Actual attendance: |__|__|

Topic/Class Name:

INTRODUCTION

	Yes	No
Group leader introduces self (name; not just "title")		
Group leader has a name tag for identification		
Group leader provides general overview of session		

NUTRITION EDUCATION OBSERVATION CHECKLIST
Group Session -- Prenatal Visit
 (continued)

TOPICS COVERED

	Assessed	Discussed	Written Material	Video	Not Covered
DIET AND PREGNANCY					
Recommended diet for pregnancy (general)					
Recommended weight gain (total lbs. and/or lbs. per week or trimester)					
Managing common problems of pregnancy (N&V, heartburn, constipation)					
Importance of adequate iron intake for prevention of anemia					
Effects of smoking					
Effects of alcohol and drugs					
Effects of caffeine					
Importance of regular prenatal care					
Prenatal vitamin and mineral supplement recommendations					
Importance of consulting doctor prior to taking over-the-counter or prescription drugs					
Other (specify): _____					

NUTRITION EDUCATION OBSERVATION CHECKLIST
Group Session -- Prenatal Visit
(continued)

	Assessed	Discussed	Written Material	Video	Not Covered
BREASTFEEDING					
Infant feeding preference					
Benefits of breastfeeding					
Management of common breastfeeding problems (e.g. sore nipples, engorgement, milk supply)					
Breastfeeding techniques/positions					
Breastfeeding in the hospital					
Breastfeeding support services/programs (e.g. La Leche League)					
Breast pumps					
Combining breastfeeding and bottle feeding					
Returning to work or school while breastfeeding					
Infant growth spurts and increased breastfeeding demand					
Nipple confusion					
Importance of ample fluids					
Effects of alcohol and other drugs on breastfed infant					
Importance of consulting doctor before taking any over-the-counter or prescription drugs					
AIDS/HIV and contraindication for breastfeeding					
Other (specify): _____					

BREASTFEEDING PROMOTION	Yes	No	N/A
Group leader advocates breastfeeding			
Group leader remains supportive and non-judgmental if participant(s) indicate preference for bottlefeeding			
Group leader investigates participants' beliefs about potential barriers to breastfeeding			
Group leader investigates family/friends support of breastfeeding			
Group leader addresses participants' questions or concerns about breastfeeding in a supportive manner			

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Prenatal Visit

(continued)

WIC PROGRAM/FOODS	Assessed	Discussed	Written Material	Video	Not Covered
Logistics of WIC voucher issuance and use					
Identification of WIC foods					
Supplemental nature of WIC food package					
Rationale for WIC foods (major nutrients)					
Other (specify): _____					

SPECIFIC RECOMMENDATIONS:

1. _____
2. _____
3. _____

4. _____
5. _____
6. _____

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Prenatal Visit

(continued)

EDUCATIONAL AIDS/MATERIALS

	Yes	No
Bulletin boards, flipcharts, posters		
Food demonstrations and/or tasting		
Food packages		
Videos		
Other (specify:) _____		

	No. Reviewed During Session	No. Provided to Take Home
Books		
Brochures, pamphlets, handouts		
Recipes		
Other written material (specify:) _____		

All session participants could speak and understand English:

Yes 1
 No 2
 Unable to ascertain 3

Participants were provided with written materials in appropriate language:

All 1
 Most 2
 Some 3
 None 4
 N/A 5

NUTRITION EDUCATION OBSERVATION CHECKLIST
Group Session -- Prenatal Visit
 (continued)

VIDEOS (ONLY)

Title/Topic _____

Start Time |__|__| : |__|__|

End time |__|__| : |__|__|

In general, participants were attentive to video:

Consistently 1
 Sometimes 2
 Rarely 3
 Never 4

Discussion of video was provided:

Yes 1
 No 2

ENVIRONMENT

Number of children present |__|

	Yes	No	N/A
Space is private enough so that others cannot easily overhear conversation			
Temperature is comfortable: not too warm or too cold			
Noise level is low enough that participants can converse easily without straining or distraction			
Toys or other activities are available for children			
Session is interrupted more than once by children			
Session is interrupted more than once by telephone or other clinic staff			

NUTRITION EDUCATION OBSERVATION CHECKLIST
Group Session -- Prenatal Visit
 (continued)

REFERRALS

	Yes	No
AFDC		
AIDS testing, counseling, treatment		
Alcohol or drug cessation program		
Day care/child care		
Dentist		
EFNEP		
English as a second language or the GED		
Family counseling and crisis intervention		
Family planning/Planned Parenthood		
Food pantry/food bank		
Food Stamps		
Head Start or other child development program		
Housing assistance		
Immunizations		
Job training		
La Leche League or other breastfeeding support program		
Lamaze or other childbirth class		
Legal aid		
Medicaid		
Medical doctor for routine medical care		
Nutrition counseling (outside of WIC)		
Prenatal care		
Smoking cessation program		
Well baby clinic/child health care		
Other (specify): _____ _____		

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Prenatal Visit

(continued)

STAFF/PARTICIPANT INTERACTION

	Yes	No	N/A
Group leader investigates potential barriers to recommended behaviors			
Group leader investigates participants' willingness to make behavior changes			
Group leader investigates participants' understanding of a majority of key concepts			
Group leader offers specific and appropriate ideas on how to implement most or all recommended behaviors			
Group leader provides opportunity for questions			
Participants ask questions or initiate line of discussion more than two times			
Group leader maintains a non-judgmental attitude at all times			
Group leader addresses questions or concerns raised by participants in a supportive manner			
One or more interactive activities are used			
<i>Only if Followup Visit:</i> Group leader elicits information about specific behaviors with reference to goals identified in previous session			

COMMENTS:

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Postpartum Visit

SESSION IDENTIFICATION

Site Code |_|_|_|

Observer Code |_|_|

Date of Observation |_|_| |_|_| |_|_|
Month Day Year

Start Time |_|_| : |_|_| End Time |_|_| : |_|_|

Type of Visit	(Re-) Certification - Mom only . . . 1	Followup - Mom only 4
	Certification - Infant 2	Followup - Infant only 5
	Certification - Combination 3	Followup - Combination 6

Client Risk Status High 1
Low 2

Risk Factors	Mom Overweight 1 Underweight 2 Low Hgb./Hct. 3 Teen (≤ 19 years old) 4 Complications-past preg 5 Smoking 6 Substance abuse 7 Not Ascertained 8 Breastfeeding 9 Other (Specify)_____	Infant Low weight/length. 1 Low length/age. 2 Low weight/age. 3 Not Ascertained. 4 Breastfeeding. 5 Other (Specify)_____
--------------	---	---

Provider Type Registered Dietitian 1
Nutritionist (not RD) 2
Paraprofessional 3
Other (Specify)_____

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Postpartum Visit

(continued)

INTRODUCTION

	Yes	No
Counselor introduces self (name; not just "title")		
Counselor has a name tag for identification		
Counselor provides general overview of session		

ASSESSMENT DATA

MOTHER	Obtained by WIC Staff	Self- report	Medical Record	Not Obtained	Not Applicable
24-hour recall					
Food frequency					
Current weight					
Prepregnancy weight					
Weight at delivery					
Height					
Food likes/dislikes					
Allergies/intolerances					

INFANT	Obtained by WIC Staff	Self- report	Medical Record	Not Obtained	Not Applicable
24-hour recall					
Food frequency					
Birthweight					
Birth length					
Current weight					
Current length					
Food likes/dislikes					
Allergies/intolerances					

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Postpartum Visit

(continued)

TOPICS COVERED

BREASTFEEDING	Assessed	Discussed	Written Material	Video	Not Covered
Benefits of breastfeeding					
Management of common breastfeeding problems (e.g. sore nipples, engorgement, milk supply)					
Breastfeeding techniques/positions					
Breastfeeding support services/programs (e.g. La Leche League)					
Breast pumps					
Combining breastfeeding and bottle feeding					
Returning to work or school while breastfeeding					
Infant growth spurts and increased breastfeeding demand					
Nipple confusion					
Importance of ample fluids					
Effects of alcohol and other drugs on breastfed infant					
Importance of consulting doctor before taking any over-the-counter or prescription drugs					
Effects of smoking on infant					
Effects of caffeine on infant					
AIDS/HIV and contraindication for breastfeeding					
Other (specify): _____ _____					

BREASTFEEDING PROMOTION	Yes	No	N/A
Counselor advocates breastfeeding			
Counselor remains supportive and non-judgmental if participant indicates desire to switch to breastfeeding			
Counselor investigates participant's beliefs about potential barriers to breastfeeding			
Counselor investigates family/friends support of breastfeeding			
Counselor addresses participant's concerns about breastfeeding in a supportive manner			

TOPICS COVERED

NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Postpartum Visit
(continued)

MOTHER	Assessed	Discussed	Written Material	Video	Not Covered
Recommended healthy diet (general)					
Foods/nutrients low in participant's diet					
Participant's current weight relative to IBW standards					
Weight loss/weight control plan					
Need for iron supplementation for at least 2 months postpartum					
Smoking/effect of second hand smoking on baby					
Importance of postpartum check up with doctor					
Other (specify): _____					
INFANT	Assessed	Discussed	Written Material	Video	Not Covered
Infant feeding practices					
Infant's rate of growth					
Formula preparation and storage					
Infant bottle syndrome					
Infant/toddler growth and development					
Introduction of solid foods - timing and pattern					
Introduction of cup					
Iron fortified formula - rationale and importance					
Other (specify): _____					
WIC PROGRAM/FOODS	Assessed	Discussed	Written Material	Video	Not Covered
Logistics of voucher issuance and use					
Identification of WIC foods					
Supplemental nature of WIC food package					
Rationale for WIC foods (major nutrients)					
Other (specify): _____					

SPECIFIC RECOMMENDATIONS

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Postpartum Visit

(continued)

1. _____

4. _____

2. _____

5. _____

3. _____

6. _____

EDUCATIONAL AIDS/MATERIALS

	Yes	No
Bulletin boards, flipcharts, posters		
Food packages		
Food demonstrations and/or tasting		
Videos		
Other (specify): _____		

	No. Reviewed During Session	No. Provided to Take Home
Books		
Brochures, pamphlets, handouts		
Recipes		
Other written material (specify:) _____		

Participant was provided with written materials in appropriate language:

All 1
 Most 2
 Some 3
 None 4
 N/A 5

NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Postpartum Visit
 (continued)

VIDEOS (ONLY)

Title/Topic _____

Start Time |__|__| : |__|__|

End Time |__|__| : |__|__|

Participant was attentive to video:

- Consistently 1
- Sometimes 2
- Rarely 3
- Never 4

Discussion of video was provided:

- Yes 1
- No 2

ENVIRONMENT

Number of infants present |__|

Number of children present |__|

	Yes	No	N/A
Space is private enough so that others cannot easily overhear conversation			
Temperature is comfortable: not too warm or too cold			
Noise level is low enough that participants can converse easily without straining or distraction			
Toys or other activities are available for children			
Session is interrupted more than once by children			
Session is interrupted more than once by telephone or other clinic staff			

NUTRITION EDUCATION OBSERVATION CHECKLIST

Individual Session -- Postpartum Visit

(continued)

REFERRALS

	Yes	No
AFDC		
AIDS testing, counseling, treatment		
Alcohol or drug cessation program		
Day care/child care		
Dentist		
EFNEP		
English as a second language or the GED		
Family counseling and crisis intervention		
Family planning/Planned Parenthood		
Food pantry/food bank		
Food Stamps		
Head Start or other child development program		
Housing assistance		
Immunizations		
Job training		
La Leche League or other breastfeeding support program		
Legal aid		
Medicaid		
Medical doctor for routine medical care		
Nutrition counseling (outside of WIC)		
Smoking cessation program		
Well baby clinic/child health care		
Other (specify): _____		

NUTRITION EDUCATION OBSERVATION CHECKLIST
Individual Session -- Postpartum Visit
 (continued)

STAFF/PARTICIPANT INTERACTION

	Yes	No	N/A
Counselor provides positive feedback about current dietary intake			
Counselor provides positive feedback about current infant feeding practices			
Counselor discusses all risk factors			
Counselor investigates potential barriers to recommended behaviors			
Counselor investigates participant's willingness to make behavior changes			
Counselor investigates participant's understanding of a majority of key concepts			
Counselor works cooperatively with participant to negotiate goals for behavior change/improvement			
Counselor offers specific and appropriate ideas on how to implement most or all recommended behaviors			
Counselor provides opportunity for questions			
Participant asks questions or initiates line of discussion more than two times			
Counselor addresses questions or concerns raised by participant in a supportive manner			
Counselor maintains a non-judgmental attitude at all times			
<i>Only if Followup Visit:</i> Counselor elicits information about specific behaviors with reference to goals identified in previous session			

COMMENTS:

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session or Class -- Postpartum Visit

SESSION IDENTIFICATION

Site Code	_ _	Observer Code	_ _
Date of Observation	_ _	_ _	_ _
	Month	Day	Year
Start Time	_ _ : _ _	End time	_ _ : _ _
Type of Visit	(Re-) Certification - Mom only 1 Certification - Infant 2 Certification - Combination 3 Followup - Mom only 4 Followup - Infant only 4 Followup - Combination 5		
Group Risk Status	High 1 Low 2 Combination 3		
Provider Type	Registered Dietitian 1 Nutritionist (not RD) 2 Paraprofessional 3 Other (Specify) 4		

Attendance

Expected attendance: |_|_|

Actual attendance: |_|_|

Topic/Class Name:

INTRODUCTION

	Yes	No
Group leader introduces self (name; not just "title")		
Group leader has a name tag for identification		
Group leader provides general overview of session		

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Postpartum Visit

(continued)

TOPICS COVERED

BREASTFEEDING	Assessed	Discussed	Written Material	Video	Not Covered
Benefits of breastfeeding					
Management of common breastfeeding problems (e.g. sore nipples, engorgement, milk supply)					
Breastfeeding techniques/positions					
Breastfeeding support services/programs (e.g. La Leche League)					
Breast pumps					
Combining breastfeeding and bottle feeding					
Returning to work or school while breastfeeding					
Infant growth spurts and increased breastfeeding demand					
Nipple confusion					
Importance of ample fluids					
Effects of alcohol and other drugs on breastfed infant					
Importance of consulting doctor before taking any over-the-counter or prescription drugs					
Effects of smoking on infant					
Effects of caffeine on infant					
AIDS/HIV and contraindication for breastfeeding					
Other (specify): _____ _____					

BREASTFEEDING PROMOTION	Yes	No	N/A
Group leader advocates breastfeeding			
Group leader remains supportive and non-judgmental if participant indicates desire to switch to breastfeeding			
Group leader investigates participants' beliefs about potential barriers to breastfeeding			
Group leader investigates family/friends support of breastfeeding			
Group leader addresses participants' concerns about breastfeeding in a supportive manner			

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Postpartum Visit

(continued)

MOTHER	Assessed	Discussed	Written Material	Video	Not Covered
Recommended healthy diet (general)					
Weight loss/weight control plan					
Need for iron supplementation for at least 2 months postpartum					
Smoking/effect of second-hand smoke on baby					
Importance of postpartum check up with doctor					
Other (specify): _____					

INFANT	Assessed	Discussed	Written Material	Video	Not Covered
Infant feeding practices					
Formula preparation and storage					
Infant bottle syndrome					
Infant/toddler growth and development					
Introduction of solid foods - timing and pattern					
Introduction of cup					
Iron fortified formula - rationale and importance					
Other (specify): _____					

WIC PROGRAM/FOODS	Assessed	Discussed	Written Material	Video	Not Covered
Logistics of voucher issuance and use					
Identification of WIC foods					
Supplemental nature of WIC food package					
Rationale for WIC foods (major nutrients)					
Other (specify): _____					

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Postpartum Visit

(continued)

SPECIFIC RECOMMENDATIONS

- | | |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

EDUCATIONAL AIDS/MATERIALS

	Yes	No
Bulletin boards, flipcharts, posters		
Food packages		
Food demonstrations and/or tasting		
Videos		
Other (specify:) _____		

	No. Reviewed During Session	No. Provided to Take Home
Books		
Brochures, pamphlets, handouts		
Recipes		
Other written material (specify:) _____		

All session participants could speak and understand English:

Yes 1
 No 2
 Unable to ascertain 3

Participants were provided with written materials in appropriate language:

All 1
 Most 2
 Some 3
 None 4
 Not Applicable 5

NUTRITION EDUCATION OBSERVATION CHECKLIST
Group Session -- Postpartum Visit
 (continued)

VIDEOS (ONLY)

Title/Topic _____

Start Time |__|__| : |__|__|

End time |__|__| : |__|__|

In general, participants were attentive to video:

Consistently 1
 Sometimes 2
 Rarely 3
 Never 4

Discussion of video was provided:

Yes 1
 No 2

ENVIRONMENT

Number of infants present |__|

Number of children present |__|

	Yes	No	N/A
Space is private enough so that others cannot easily overhear conversation			
Temperature is comfortable: not too warm or too cold			
Noise level is low enough that participants can converse easily without straining or distraction			
Toys or other activities are available for children			
Session is interrupted more than once by children			
Session is interrupted more than once by telephone or other clinic staff			

NUTRITION EDUCATION OBSERVATION CHECKLIST
Group Session -- Postpartum Visit
 (continued)

REFERRALS

	Yes	No
AFDC		
AIDS testing, counseling, treatment		
Alcohol or drug cessation program		
Day care/child care		
Dentist		
EFNEP		
English as a second language or the GED		
Family counseling and crisis intervention		
Family planning/Planned Parenthood		
Food pantry/food bank		
Food Stamps		
Head Start or other child development program		
Housing assistance		
Immunizations		
Job training		
La Leche League or other breastfeeding support program		
Legal aid		
Medicaid		
Medical doctor for routine medical care		
Nutrition counseling (outside of WIC)		
Smoking cessation program		
Well baby clinic/child health care		
Other (specify): _____ _____ _____		

NUTRITION EDUCATION OBSERVATION CHECKLIST

Group Session -- Postpartum Visit

(continued)

STAFF/PARTICIPANT INTERACTION

	Yes	No	N/A
Group leader investigates potential barriers to recommended behaviors			
Group leader investigates participants' willingness to make behavior changes			
Group leader investigates participants' understanding of a majority of key concepts			
Group leader offers specific and appropriate ideas on how to implement most or all recommended behavior changes			
Group leader provides opportunity for questions			
Participants ask questions or initiate line of discussion more than two times			
Group leader maintains a non-judgmental attitude at all times			
Group leader addresses questions or concerns raised by participants in a supportive manner			
One or more interactive activities are used			
<i>Only if Followup Visit:</i> Group leader elicits information about specific behaviors with reference to goals identified in previous session			

COMMENTS:



APPENDIX D

SUPPLEMENTARY EXHIBITS



Exhibit D.1
Reasons for Non-Response: Prenatal Survey

SOUTHEAST		Site 1		Site 2	
	Percent of Baseline Sample	Percent of Prenatal Non-responders	Percent of Baseline Sample	Percent of Prenatal Non-responders	
Ineligible for prenatal survey					
Early delivery ¹	9%	45%	12%	65%	
Terminated pregnancy ²	4	21	4	24	
Other ³	0	1	0	1	
Not interviewed					
Unlocatable ⁴	5	28	1	3	
Refusal	0	0	1	3	
Moved out of area	1	5	1	4	
MOUNTAIN PLAINS		Site 1		Site 2	
	Percent of Baseline Sample	Percent of Prenatal Non-responders	Percent of Baseline Sample	Percent of Prenatal Non-responders	
Ineligible for prenatal survey					
Early delivery ¹	4%	24%	6%	30%	
Terminated pregnancy ²	5	31	8	37	
Other ³	0	1	1	5	
Not interviewed					
Unlocatable ⁴	5	28	2	8	
Refusal	2	9	2	10	
Moved out of area	1	6	2	11	
MIDWEST		Site 1		Site 2	
	Percent of Baseline Sample	Percent of Prenatal Non-responders	Percent of Baseline Sample	Percent of Prenatal Non-responders	
Ineligible for prenatal survey					
Early delivery ¹	13%	47%	8%	37%	
Terminated pregnancy ²	6	21	8	37	
Other ³	0	1	1	3	
Not interviewed					
Unlocatable ⁴	6	20	2	9	
Refusal	2	5	0	1	
Moved out of area	2	6	3	12	

¹Delivered before Prenatal survey was attempted (generally between 32 and 36 weeks gestation).

²Includes both miscarriages and abortions. (In the two Mountain Plains sites, as well as in the Site 1 Midwest site, terminated pregnancies may include some women who were not actually pregnant at the time of WIC certification. Mountain Plains does not require proof of pregnancy and the Midwest site allows women to participate up to 90 days without proof of pregnancy.

³Includes: infant given up for adoption or placed in foster care, infant death, respondent death, and woman not certified for WIC.

⁴Respondent could not be located for prenatal survey but there was no evidence that respondent had moved out of the area. These respondents were retained in the postpartum survey sample.

Exhibit D.2

Reasons for Non-Response: Postpartum Survey

SOUTHEAST		Site 1		Site 2	
		Percent of Baseline Sample	Percent of Postpartum Non-responders	Percent of Baseline Sample	Percent of Postpartum Non-responders
Ineligible for postpartum survey					
Terminated pregnancy		4%	17%	5%	36%
Other ¹		3	13	1	7
Not interviewed					
Moved out of area		5	18	2	11
Unlocatable		12	49	5	38
Refusal		1	2	1	9
MOUNTAIN PLAINS		Site 1		Site 2	
		Percent of Baseline Sample	Percent of Postpartum Non-responders	Percent of Baseline Sample	Percent of Postpartum Non-responders
Ineligible for postpartum survey					
Terminated pregnancy		5%	23%	8%	27%
Other ¹		2	8	6	7
Not interviewed					
Moved out of area		2	7	5	17
Unlocatable		12	53	5	20
Refusal		2	9	8	28
MIDWEST		Site 1		Site 2	
		Percent of Baseline Sample	Percent of Postpartum Non-responders	Percent of Baseline Sample	Percent of Postpartum Non-responders
Ineligible for postpartum survey					
Terminated pregnancy		6%	21%	9%	46%
Other ¹		6	4	4	3
Not interviewed					
Moved out of area		5	17	3	15
Unlocatable		14	50	5	23
Refusal		2	8	3	13

¹Includes: infant given up for adoption or placed in foster care, infant death, respondent death, and woman not certified for WIC.

Exhibit D.3

Characteristics of Baseline Sample and Analytic Samples (Mean Values)

	Baseline Sample	Analytic Samples		
		Baseline Survey, Prenatal Survey, and Abstract	Baseline Survey, Postpartum Survey, and Abstract	All Surveys
Age				
Under 18	0.1	0.1	0.1	0.1
Over 35	0.1	0.1	0.1	0.1
Race				
Black	0.2	0.2	0.2	0.2
Hispanic	0.3	0.3	0.3	0.3
Other	0.1	0.0	0.0	0.0
Marital Status				
Currently married	0.4	0.4	0.4	0.4
Previously married	0.1	0.1	0.1	0.1
Employment Status				
Employed	0.3	0.3	0.3	0.3
Employed full-time	0.1	0.1	0.1	0.1
Education				
Less than 12th grade	0.4	0.4	0.4	0.4
Some college	0.3	0.3	0.3	0.3
Currently in school	0.2	0.2	0.2	0.2
Household Characteristics				
No children	0.4	0.4	0.4	0.4
More than one child	0.3	0.3	0.3	0.3
Other adult	0.8	0.9	0.9	0.9
Receipt of AFDC and Food Stamp Benefits				
Any AFDC	0.2	0.2	0.2	0.2
Any Food Stamps	0.4	0.4	0.3	0.3

Exhibit D.3
(continued)

		Analytic Samples		
	Baseline Sample	Baseline Survey, Prenatal Survey, and Abstract	Baseline Survey, Postpartum Survey, and Abstract	All Surveys
Household Income				
Less than 50 percent of poverty	0.4	0.4	0.4	0.4
Greater than 130 percent of poverty	0.2	0.2	0.2	0.2
Pregnancy History				
Previous pregnancy	0.6	0.6	0.6	0.6
First trimester enrollee	0.4	0.4	0.4	0.4
Third trimester enrollee	0.1	0.1	0.1	0.1
No prenatal care	0.2	0.2	0.2	0.2
Previous WIC Experience				
Yes	0.4	0.4	0.4	0.4

Note: All values in exhibit represent means of dichotomous variables with, unless otherwise specified, values of zero for no and one for yes.

Exhibit D.4

Topics Covered in Observed Prenatal Nutrition Education Contacts: Southeast Sites

Topic	SOUTHEAST			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups ¹ (n = 5)	Certifications (n = 8)	Follow-ups (n = 7)
<i>WIC foods</i>				
How to use WIC vouchers	8	1	7	0
Foods you can get with WIC vouchers	8	1	8	0
Supplemental nature of WIC food package				
Rationale for WIC foods (major nutrients)	8	1	8	3
<i>Prenatal Issues</i>				
Types and amounts of food to eat while pregnant	7	6	8	7
Importance of prenatal care	1	3	0	4
Recommended weight gain	7	4	8	7
Participant's relative rate of weight gain	6	6	1	4
Dealing with complications of pregnancy	5	4	1	3
Need to consult physician before taking over-the-counter medications	4	2	4	1
Effects of alcohol and drugs	2	2	8	6
Effects of smoking	3	2	8	6
Effects of caffeine	1	4	6	6
Importance of prenatal vitamin and mineral supplements	7	5	8	6
Iron: intake, food sources, absorption	7	5	8	6
Other issues ²	0	0	0	5

Exhibit D.4
(continued)

Topic	SOUTHEAST			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups ¹ (n = 5)	Certifications (n = 8)	Follow-ups (n = 7)
<i>Breastfeeding</i>				
Benefits of breastfeeding	7	1	7	0
Importance of adequate fluids while breastfeeding	1	0	0	0
Dealing with common breastfeeding problems	1	0	5	0
Breastfeeding supports services ⁴	1	0	7	1
Breastfeeding techniques/positions	6	0	0	0
Combining breastfeeding and bottle feeding ³	7	0	7	0
Infant growth spurts and increased breastfeeding demand	1	0	0	0
Effects of alcohol, smoking, and other drugs on breastfed infant	0	0	1	0
Need to consult physician before taking over-the-counter medications	0	0	0	0
Infant feeding preference	5	1	7	1
Breastfeeding in the hospital	5	0	1	0
Other issues ⁵	0	0	1	0

¹Includes high-risk participants only. Low-risk participants receive newsletter in conjunction with voucher pick-up.

²Includes controlling appetite, dealing with allergies, increasing fluids, exercise, posture, and sodium intake.

³Includes returning to work/school, breast pumps, and nipple confusion

⁴Includes peer counseling, breastfeeding classes, lactation consultants, La Leche League, and other breastfeeding support services.

⁵Includes AIDS/HIV and contraindications for breastfeeding.

Exhibit D.5

Topics Covered in Prenatal Nutrition Education Contacts: Mountain Plains

Topic	MOUNTAIN PLAINS			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups (n = 7)	Certifications (n = 8)	Follow-ups (n = 7)
<i>WIC foods</i>				
How to use WIC vouchers	8	7	7	2
Foods you can get with WIC vouchers	8	7	8	1
Supplemental nature of WIC food package	7	0	7	0
Rationale for WIC foods (major nutrients)	8	0	4	0
<i>Prenatal issues</i>				
Types and amounts of food to eat while pregnant	8	2	8	2
Importance of prenatal care	8	4	6	3
Recommended weight gain	8	3	8	4
Participant’s relative rate of weight gain	0	5	8	7
Dealing with complications of pregnancy	8	2	8	1
Need to consult physician before taking over-the-counter medications	8	0	4	0
Effects of alcohol and drugs	8	4	8	0
Effects of smoking	8	5	8	2
Effects of caffeine	8	0	8	0
Importance of prenatal vitamin and mineral supplements	8	1	8	5
Iron: intake, food sources, absorption	8	0	3	0
Other issues ¹	0	0	0	1

Exhibit D.5
(continued)

Topic	MOUNTAIN PLAINS			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups (n = 7)	Certifications (n = 8)	Follow-ups (n = 7)
<i>Breastfeeding</i>				
Benefits of breastfeeding	8	0	8	3
Importance of adequate fluids while breastfeeding	3	0	2	1
Dealing with common breastfeeding problems	6	0	5	5
Breastfeeding supports services ²	3	0	2	3
Breastfeeding techniques/positions	4	0	3	4
Combining breastfeeding and bottle feeding ³	4	0	6	6
Infant growth spurts and increased breastfeeding demand	0	0	2	2
Effects of alcohol, smoking, and other drugs on breastfed infant	2	0	6	1
Need to consult physician before taking over-the-counter medications	0	0	3	1
Infant feeding preference	8	4	8	6
Breastfeeding in the hospital	0	0	0	3
Other issues ⁴	0	0	0	0

¹Includes controlling appetite, dealing with allergies, increasing fluids, exercise, posture, and sodium intake.

²Includes peer counseling, breastfeeding classes, lactation consultants, La Leche League, and other breastfeeding support services.

³Includes returning to work/school, breast pumps, and nipple confusion.

⁴Includes AIDS/HIV and contraindications for breastfeeding.

Exhibit D.6

Topics Covered in Prenatal Nutrition Education Contacts: Midwest Sites

Topic	MIDWEST	
	Site 1	Site 2
	Number of Contacts in Which Topic Was Covered	
	Certifications (n = 8)	Certifications (n = 12)
<i>WIC foods</i>		
How to use WIC vouchers	5	12
Foods you can get with WIC vouchers	5	12
Supplemental nature of WIC food package	2	0
Rationale for WIC foods (major nutrients)	1	1
<i>Prenatal Issues</i>		
Types and amounts of food to eat while pregnant	8	11
Importance of prenatal care	6	9
Recommended weight gain	7	11
Participant's relative rate of weight gain	7	11
Dealing with complications of pregnancy	8	11
Need to consult physician before taking over-the-counter medications	7	4
Effects of alcohol and drugs	8	10
Effects of smoking	8	11
Effects of caffeine	4	8
Importance of prenatal vitamin and mineral supplements	8	8
Iron: intake, food sources, absorption	8	8
Other issues ¹	1	0

Exhibit D.6
(continued)

Topic	MIDWEST	
	Site 1	Site 2
	Number of Contacts in Which Topic Was Covered	
	Certifications (n = 8)	Certifications (n = 12)
<i>Breastfeeding</i>		
Benefits of breastfeeding	7	9
Importance of adequate fluids while breastfeeding	1	4
Dealing with common breastfeeding problems	0	2
Breastfeeding supports services ²	0	5
Breastfeeding techniques/positions	1	5
Combining breastfeeding and bottle feeding ³	1	8
Infant growth spurts and increased breastfeeding demand	0	1
Effects of alcohol, smoking, and other drugs on breastfed infant	1	0
Need to consult physician before taking over-the-counter medications	1	1
Infant feeding preference	7	11
Breastfeeding in the hospital	2	1
Other issues ⁴	1	0

Note: Data not reported for follow-up contacts because so few were observed (2 in Site 1 and 3 in Site 2).

¹Includes controlling appetite, dealing with allergies, increasing fluids, exercise, posture, and sodium intake.

²Includes peer counseling, breastfeeding classes, lactation consultants, La Leche League, and other breastfeeding support services.

³Includes returning to work/school, breast pumps, and nipple confusion.

⁴Includes AIDS/HIV and contraindications for breastfeeding.

Exhibit D.7

Topics Covered in Observed Postpartum Nutrition Education Contacts: Southeast Sites

Topic	SOUTHEAST			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 7)	Follow-ups (n = 0)	Certifications (n = 7)	Follow-ups (n = 4)
<i>WIC foods</i>				
How to use WIC vouchers	3	N/A	3	0
Foods you can get with WIC vouchers	3	N/A	5	0
Supplemental nature of WIC food package	3	N/A	3	0
Rationale for WIC foods (major nutrients)	1	N/A	5	0
<i>Maternal health and nutrition</i>				
Recommended healthy diet	6	N/A	4	0
Weight loss/weight control plan	1	N/A	3	0
Importance of postpartum check up with doctor	1	N/A	2	0
Smoking/effect of second-hand smoke on baby	0	N/A	3	0
Iron intake, absorption, and supplementation	4	N/A	4	0
Exercise/posture	0	N/A	2	0
Other issues ¹	0	N/A	1	0
<i>Infant feeding</i>				
Importance of iron-fortified formula	4	N/A	5	4
Introducing solid foods	4	N/A	5	4
Avoiding bottle caries ²	4	N/A	0	0

Exhibit D.7
(continued)

Topic	SOUTHEAST			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 7)	Follow-ups (n = 0)	Certifications (n = 7)	Follow-ups (n = 4)
<i>Infant feeding (continued)</i>				
Current infant feeding practices/ recommendations	4	N/A	5	4
Formula preparation and storage	4	N/A	5	4
Allergies/food intolerances	0	N/A	4	4
Infant’s rate of growth	4	N/A	5	4
Infant/toddler growth and development	4	N/A	5	4
Immunizations/medical care	2	N/A	0	3
Prevention of lead poisoning	2	N/A	0	0
Shaken baby syndrome	4	N/A	0	0
Other issues ³	0	N/A	0	1
<i>Breastfeeding</i>				
Benefits of breastfeeding	5	N/A	2	1
Importance of adequate fluids while breastfeeding	1	N/A	0	0
Dealing with typical breastfeeding problems	1	N/A	1	0
Breastfeeding support services ⁴	1	N/A	1	0
Breastfeeding techniques/positions	5	N/A	0	0
Combining breastfeeding and bottle feeding ⁵	2	N/A	1	0
Infant growth spurts and increased breastfeeding demand	0	N/A	2	1

Exhibit D.7
(continued)

Topic	SOUTHEAST			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 7)	Follow-ups (n = 0)	Certifications (n = 7)	Follow-ups (n = 4)
<i>Breastfeeding (continued)</i>				
Effects of alcohol, smoking, caffeine, and other drugs on breastfed infant	0	N/A	2	1
Need to consult doctor before taking any over-the-counter medications	1	N/A	2	1
Other issues ⁶	0	N/A	0	0

¹Includes appetite, allergies, increasing fluids, sodium intake, and finishing up prenatal supplements.

²Includes introduction of cup and appropriate use of bottle.

³Includes medications, giving water to infants, fluoride sources, holding baby during feedings, making own baby foods, and information on bowel movements and other health risks.

⁴Includes peer counseling, breastfeeding classes, Lactation Consultants, La Leche League, and other breastfeeding support services.

⁵Includes returning to work/school, breast pumps, and nipple confusion.

⁶Includes AIDS/HIV and contraindication of breastfeeding, weaning and nursing an older child.

Exhibit D.8

Topics Covered in Observed Postpartum Nutrition Education Contacts: Mountain Plains Sites

Topic	MOUNTAIN PLAINS			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups (n = 7)	Certifications (n = 8)	Follow-ups (n = 7)
<i>WIC foods</i>				
How to use WIC vouchers	8	7	5	2
Foods you can get with WIC vouchers	7	7	7	3
Supplemental nature of WIC food package	0	1	4	1
Rationale for WIC foods (major nutrients)	1	0	3	0
<i>Maternal health and nutrition</i>				
Recommended healthy diet	5	1	7	3
Weight loss/weight control plan	5	1	8	2
Importance of postpartum check up with doctor	2	0	5	1
Smoking/effect of second-hand smoke on baby	5	0	8	1
Iron intake, absorption, and supplementation	3	0	7	1
Exercise/posture	0	0	1	0
Other issues ¹	0	0	1	0
<i>Infant feeding</i>				
Importance of iron-fortified formula	1	1	0	2
Introducing solid foods	5	1	6	3
Avoiding bottle caries ²	1	1	4	1

Exhibit D.8
(continued)

Topic	MOUNTAIN PLAINS			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups (n = 7)	Certifications (n = 8)	Follow-ups (n = 7)
<i>Infant feeding (continued)</i>				
Current infant feeding practices/ recommendations	7	3	6	3
Formula preparation and storage	1	0	4	1
Allergies/food intolerances	0	0	0	0
Infant’s rate of growth	6	3	6	2
Infant/toddler growth and development	5	3	1	1
Immunizations/medical care	0	0	0	0
Prevention of lead poisoning	0	0	0	0
Shaking baby syndrome	0	0	0	0
Other issues ³	0	0	1	0
<i>Breastfeeding</i>				
Benefits of breastfeeding	1	0	1	0
Importance of adequate fluids while breastfeeding	0	0	0	0
Dealing with typical breastfeeding problems	0	0	0	0
Breastfeeding support services ⁴	0	0	0	0
Breastfeeding techniques/positions	0	0	0	0
Combining breastfeeding and bottle feeding ⁵	0	0	0	0
Infant growth spurts and increased breastfeeding demand	0	0	0	0

Exhibit D.8
(continued)

Topic	MOUNTAIN PLAINS			
	Site 1		Site 2	
	Number of Contacts in Which Topic Was Covered			
	Certifications (n = 8)	Follow-ups (n = 7)	Certifications (n = 8)	Follow-ups (n = 7)
<i>Breastfeeding (continued)</i>				
Effects of alcohol, smoking, caffeine, and other drugs on breastfed infant	0	0	2	0
Need to consult doctor before taking any over-the-counter medications	0	0	0	0
Other issues ⁶	0	0	0	0

¹Includes appetite, allergies, increasing fluids, sodium intake, and finishing up prenatal supplements.

²Includes introduction of cup and appropriate use of bottle.

³Includes medications, giving water to infants, fluoride sources, holding baby during feedings, making own baby foods, and information on bowel movements and other health risks.

⁴Includes peer counseling, breastfeeding classes, Lactation Consultants, La Leche League, and other breastfeeding support services.

⁵Includes returning to work/school, breast pumps, and nipple confusion.

⁶Includes AIDS/HIV and contraindication of breastfeeding, weaning and nursing an older child.

Topics Covered in Postpartum Nutrition Education Contacts: Midwest Sites

Topic	MIDWEST	
	Site 1	Site 2
	Number of Contacts in Which Topic Was Covered	
	Certifications (n = 6)	Certifications (n = 10)
<i>WIC foods</i>		
How to use WIC vouchers	4	10
Foods you can get with WIC vouchers	2	10
Supplemental nature of WIC food package	0	2
Rationale for WIC foods (major nutrients)	3	1
<i>Maternal health and nutrition</i>		
Recommended healthy diet	6	10
Weight loss/weight control plan	1	4
Importance of postpartum check up with doctor	0	4
Smoking/effect of second-hand smoke on baby	1	3
Iron intake, absorption, and supplementation	4	4
Exercise/posture	0	0
Other issues ¹	0	1
<i>Infant feeding</i>		
Importance of iron-fortified formula	3	6
Introducing solid foods	0	2
Avoiding bottle caries ²	0	0
Current infant feeding practices/ recommendations	5	6
Formula preparation and storage	1	4
Allergies/food intolerances	1	6
Infant's rate of growth	2	4
Infant/toddler growth and development	0	1

Exhibit D.9
(continued)

Topic	MIDWEST	
	Site 1	Site 2
	Number of Contacts in Which Topic Was Covered	
	Certifications (n = 6)	Certifications (n = 10)
<i>Infant feeding</i> <i>(continued)</i>		
Immunizations/medical care	0	0
Prevention of lead poisoning	0	1
Shaking baby syndrome	0	1
Other issues ³		
<i>Breastfeeding</i>		
Benefits of breastfeeding	1	0
Importance of adequate fluids while breastfeeding		0
Dealing with typical breastfeeding problems	0	0
Breastfeeding support services ⁴	1	0
Breastfeeding techniques/positions	0	0
Combining breastfeeding and bottle feeding ⁵	2	0
Infant growth spurts and increased breastfeeding demand	0	0
Effects of alcohol, smoking, caffeine, and other drugs on breastfed infant	0	0
Need to consult doctor before taking any over-the-counter medications	0	0
Other issues ⁶	0	0

Note: Data not reported for follow-up contacts because so few were observed (2 in Site 1 and 3 in Site 2).

¹Includes appetite, allergies, increasing fluids, sodium intake, and finishing up prenatal supplements.

²Includes introduction of cup and appropriate use of bottle.

³Includes medications, giving water to infants, fluoride sources, holding baby during feedings, making own baby foods, and information on bowel movements and other health risks.

⁴Includes peer counseling, breastfeeding classes, Lactation Consultants, La Leche League, and other breastfeeding support services.

⁵Includes returning to work/school, breast pumps, and nipple confusion.

⁶Includes AIDS/HIV and contraindication of breastfeeding, weaning and nursing an older child.

Exhibit D.10

Participant Reports of Information and Advice Received from WIC Staff: Southeast Sites

Topic	SOUTHEAST			
	Site 1		Site 2	
	Prenatal (n = 324)	Postpartum ¹ (n = 301)	Prenatal (n = 329)	Postpartum ¹ (n = 344)
WIC Foods				
How to use WIC vouchers	91.7%	98.3%	95.4%	96.5%
Foods you can get with WIC vouchers	94.8	98.0	93.9	97.3
Prenatal Issues				
Types and amounts of food to eat while pregnant	94.4	97.4	85.7	96.5
How to get more halite in your diet ²	88.9	96.0	24.3	46.5
Importance of prenatal care	88.3	N/A	83.9	N/A
Weight gain during pregnancy	89.8	N/A	70.2	N/A
Dealing with complications of pregnancy ³	76.9	N/A	54.1	N/A
Need to consult physician before taking over-the-counter medications	81.5	N/A	78.7	N/A
Effects of alcohol, smoking, caffeine and other drugs	86.4	N/A	87.8	N/A
Importance of prenatal vitamin and iron pills	87.7	N/A	83.9	N/A
Chewing gums to avoid while pregnant ²	36.1	N/A	5.5	N/A
Breastfeeding/Infant Feeding				
Benefits of breastfeeding	86.7	N/A	89.4	N/A
Importance of adequate fluids while breastfeeding	72.8	93.7	58.4	83.5
Importance of glucose intake while breastfeeding ²	56.8	88.8	28.9	61.6
Dealing with typical breastfeeding problems ⁴	54.6	87.3	49.5	76.8
Importance of iron-fortified formula	61.4	90.8	71.8	91.1
Introducing solid foods	48.8	88.2	51.7	85.4
Avoiding bottle caries	58.3	91.1	66.9	90.8
Breastfeeding support services	46.0	81.8	83.9	93.0
Other issues	3.4	4.0	1.8	8.4

N/A = Topics included in prenatal survey only.

¹May includes information received any time between certification and four-to-six months postpartum.

²"Nonsense" item inserted to get some idea of how carefully respondents answered questions.

³Issues such as nausea, vomiting, heartburn and constipation.

⁴Issues such as sore nipples, infants who won't latch on, and planning breastfeeding around normal daily activities.

Exhibit D.11

Participant Reports of Information and Advice Received from WIC Staff: Mountain Plains Sites

Topic	MOUNTAIN PLAINS			
	Site 1		Site 2	
	Prenatal (n = 333)	Postpartum ¹ (n = 310)	Prenatal (n = 237)	Postpartum ¹ (n = 218)
<i>WIC Foods</i>				
How to use WIC vouchers	98.8%	99.7%	94.1%	98.0%
Foods you can get with WIC vouchers	99.7	100.0	97.9	100.0
<i>Prenatal Issues</i>				
Types and amounts of food to eat while pregnant	96.1	98.6	96.2	98.8
How to get more halite in your diet ²	35.4	46.1	24.1	42.6
Importance of prenatal care	86.8	N/A	89.9	N/A
Weight gain during pregnancy	92.5	N/A	92.8	N/A
Dealing with complications of pregnancy ³	74.8	N/A	66.7	N/A
Need to consult physician before taking over-the-counter medications	79.0	N/A	82.7	N/A
Effects of alcohol, smoking, caffeine and other drugs	88.0	N/A	92.4	N/A
Importance of prenatal vitamin and iron pills	87.1	N/A	85.7	N/A
Chewing gums to avoid while pregnant ²	9.0	N/A	7.2	N/A
<i>Breastfeeding/Infant Feeding</i>				
Benefits of breastfeeding	94.0	N/A	94.9	N/A
Importance of adequate fluids while breastfeeding	71.5	86.8	74.7	90.0
Importance of glucose intake while breastfeeding ²	36.0	54.2	40.5	59.4
Dealing with typical breastfeeding problems ⁴	51.7	71.6	70.5	84.7
Importance of iron-fortified formula	62.5	81.4	61.2	85.9
Introducing solid foods	39.0	69.3	40.5	77.5
Avoiding bottle caries	61.3	85.7	73.4	90.8
Breastfeeding support services	52.2	71.4	59.1	80.7
Other issues	3.3	11.5	3.4	12.4

N/A = Topics included in prenatal survey only.

¹May includes information received any time between certification and four-to-six months postpartum.

²"Nonsense" item inserted to get some idea of how carefully respondents answered questions.

³Issues such as nausea, vomiting, heartburn and constipation.

⁴Issues such as sore nipples, infants who won't latch on, and planning breastfeeding around normal daily activities.

Exhibit D.12

Participant Reports of Information and Advice Received from WIC Staff: Midwest Sites

Topic	MIDWEST			
	Site 1		Site 2	
	Prenatal (n = 216)	Postpartum ¹ (n = 216)	Prenatal (n = 233)	Postpartum ¹ (n = 239)
WIC Foods				
How to use WIC vouchers	92.6%	97.6%	92.7%	96.8%
Foods you can get with WIC vouchers	93.5	97.6	93.6	98.4
Prenatal Issues				
Types and amounts of food to eat while pregnant	88.9	96.4	87.6	97.2
How to get more halite in your diet ²	23.2	30.2	26.2	42.5
Importance of prenatal care	88.0	N/A	88.0	N/A
Weight gain during pregnancy	69.0	N/A	67.8	N/A
Dealing with complications of pregnancy ³	58.8	N/A	55.8	N/A
Need to consult physician before taking over-the-counter medications	75.9	N/A	79.4	N/A
Effects of alcohol, smoking, caffeine and other drugs	88.4	N/A	88.4	N/A
Importance of prenatal vitamin and iron pills	83.8	N/A	81.1	N/A
Chewing gums to avoid while pregnant ²	6.9	N/A	4.3	N/A
Breastfeeding/Infant Feeding				
Benefits of breastfeeding	87.5	N/A	90.1	N/A
Importance of adequate fluids while breastfeeding	60.2	73.8	61.4	78.6
Importance of glucose intake while breastfeeding ⁴	35.7	49.6	39.1	61.1
Dealing with typical breastfeeding problems ⁵	44.4	59.5	47.6	67.1
Importance of iron-fortified formula	65.7	88.1	47.2	84.5
Introducing solid foods	45.8	72.6	26.2	66.3
Avoiding bottle caries	68.5	89.3	60.1	92.5
Breastfeeding support services	60.7	67.1	77.7	90.1
Other issues	6.5	11.5	3.9	7.1

N/A = Topics included in prenatal survey only.

¹May includes information received any time between certification and four-to-six months postpartum.

²"Nonsense" item inserted to get some idea of how carefully respondents answered questions.

³Issues such as nausea, vomiting, heartburn and constipation.

⁴Issues such as sore nipples, infants who won't latch on, and planning breastfeeding around normal daily activities.

Exhibit D.13

Participant Reports of Knowledge Gained from WIC Program

Knowledge gained from WIC	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey	(n = 324)	(n = 329)	(n = 333)	(n = 310)	(n = 216)	(n = 216)
Healthy eating during pregnancy	26.2 %	16.1 %	30.6 %	28.3 %	18.5 %	9.9 %
Breastfeeding	8.3	17.0	10.8	23.2	14.3	12.4
Feeding infants/children	7.7	2.1	3.0	5.5	5.6	5.1
Infant care/health	0.0	0.0	0.0	0.0	0.0	0.0
Healthy practices during pregnancy	2.2	2.4	5.1	0.4	2.8	1.3
Food sources for specific nutrient(s)	0.3	2.4	1.2	0.4	1.4	2.6
How WIC works (vouchers, etc.)	1.5	2.4	1.2	1.3	3.2	2.6
Where to get needed services	0.0	0.0	0.0	0.4	1.9	2.1
Other	0.4	2.1	0.6	3.4	3.2	3.8
Postpartum Survey	(n = 301)	(n = 344)	(n = 237)	(n = 218)	(n = 233)	(n = 239)
Healthy eating during pregnancy	29.6 %	18.0 %	31.0 %	22.0 %	19.4 %	14.2 %
Breastfeeding	6.3	14.2	10.0	14.7	11.1	13.0
Feeding infants/children	29.6	9.3	10.7	14.7	6.5	12.6
Infant care/health	12.3	1.7	2.9	1.8	0.9	3.3
Healthy practices during pregnancy	0.7	0.9	2.6	1.4	0.0	0.4
Food sources for specific nutrient(s)	0.3	4.1	1.0	1.8	1.9	1.3
How WIC works (vouchers, etc.)	1.0	1.4	1.6	0.5	0.4	1.3
Where to get needed services	0.0	0.0	0.0	0.0	0.5	0.0
Other	1.3	2.3	1.9	2.8	4.2	1.7

Note: Items listed reflect topic areas mentioned by two percent or more of respondents in any site in either prenatal or postpartum surveys.

Exhibit D.14

Participant Suggestions for Nutrition Education Improvement

Suggestion	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Survey						
None	(n = 324) 95.7 %	(n = 329) 90.6 %	(n = 333) 87.1 %	(n = 310) 88.2 %	(n = 216) 88.4 %	(n = 216) 85.0 %
Improve content or delivery	1.9	4.9	7.5	3.0	2.8	1.7
More personal contact	0.9	4.0	2.7	4.6	2.8	1.7
Increase awareness/opportunities	0.6	1.2	1.2	0.4	2.3	3.0
More/different written materials	0.0	0.3	3.0	2.1	2.3	3.4
Other	1.5	3.0	3.0	1.7	1.4	1.3
Postpartum Survey						
None	(n = 301) 96.7 %	(n = 344) 88.7 %	(n = 237) 84.2 %	(n = 218) 89.0 %	(n = 233) 86.6 %	(n = 239) 81.2 %
Improve content or delivery	2.0	7.0	9.4	6.0	5.6	5.9
More personal contact	0.0	2.0	1.9	0.0	0.9	2.5
Increase awareness/opportunities	1.0	0.6	1.9	0.0	2.8	1.7
More/different written materials	0.0	0.6	2.9	3.2	4.6	4.6
Other	1.0	4.7	3.5	1.8	0.5	5.4

Note: Percentages may not sum to 100 because respondents could make more than one suggestion.

Exhibit D.15
Satisfaction with WIC Experiences

SOUTHEAST	Site 1		Site 2	
	Prenatal Survey (n=324)	Postpartum Survey (n=301)	Prenatal Survey (n=329)	Postpartum Survey (n=344)
The staff was helpful				
Strongly agree	14.8%	12.6%	26.4%	33.1%
Agree	79.6	84.7	67.5	63.1
The staff made me wait too long				
Disagree	2.5	0.3	7.0	7.3
Strongly disagree	79.3	84.0	62.0	55.8
I was respected as an individual				
Strongly agree	9.3	7.6	14.9	19.8
Agree	86.7	90.7	78.1	73.2
Things were explained in a way I could understand				
Strongly agree	6.2	9.6	20.7	22.4
Agree	86.4	88.4	76.6	75.9
The staff was warm and friendly				
Strongly agree	9.9	7.0	21.3	19.9
Agree	83.3	89.7	69.9	71.5
My questions were answered				
Strongly agree	5.6	6.3	17.9	17.1
Agree	87.7	91.4	79.0	81.1
I felt satisfied when I left the WIC clinic				
Strongly agree	6.8	6.3	19.2	17.1
Agree	86.1	91.0	75.7	75.9
I felt confused when I left the WIC clinic				
Disagree	4.3	1.3	26.4	26.2
Strongly disagree	79.6	91.4	69.0	70.1
Some of the advice I received contradicted what my doctor told me				
Disagree	3.7	0.0	8.2	4.4
Strongly disagree	76.8	75.8	76.6	71.8
The counselors helped me decide how to feed my baby				
Strongly agree	3.4	2.0	4.3	4.9
Agree	60.8	83.1	33.4	38.7
The information was tailored to my individual needs				
Strongly agree	5.9	4.0	4.6	2.9
Agree	77.5	93.0	74.5	81.7
The information was helpful				
Strongly agree	5.9	7.0	12.5	11.9
Agree	89.2	90.7	83.9	86.0

Exhibit D.15
(continued)

MOUNTAIN PLAINS	Site 1		Site 2	
	Prenatal Survey (n=333)	Postpartum Survey (n=237)	Prenatal Survey (n=310)	Postpartum Survey (n=218)
The staff was helpful				
Strongly agree	32.1%	34.9%	45.2%	38.1%
Agree	66.4	63.2	53.6	61.5
The staff made me wait too long				
Strongly disagree	14.7	14.5	17.7	18.8
Disagree	76.6	74.8	76.8	70.6
I was respected as an individual				
Strongly agree	30.3	31.9	38.8	30.3
Agree	69.1	64.8	59.9	67.4
Things were explained in a way I could understand				
Strongly agree	30.0	30.6	40.9	31.2
Agree	68.2	68.1	58.2	68.8
The staff was warm and friendly				
Strongly agree	30.3	23.6	37.1	29.8
Agree	67.6	72.3	61.2	66.5
My questions were answered				
Strongly agree	25.2	26.1	32.5	25.7
Agree	73.3	71.6	67.1	72.9
I felt satisfied when I left the WIC clinic				
Strongly agree	27.9	28.4	33.3	30.7
Agree	68.5	68.1	65.0	66.0
I felt confused when I left the WIC clinic				
Strongly disagree	26.1	26.8	30.4	27.5
Disagree	69.7	69.0	67.5	70.2
Some of the advice I received contradicted what my doctor told me				
Strongly disagree	12.3	11.0	11.0	9.2
Disagree	71.2	61.9	66.2	54.6
The counselors helped me decide how to feed my baby				
Strongly agree	3.9	5.2	8.4	4.6
Agree	30.6	36.1	40.1	54.6
The information was tailored to my individual needs				
Strongly agree	7.8	11.3	14.4	10.6
Agree	76.0	75.8	76.4	77.5
The information was helpful				
Strongly agree	15.3	17.1	24.9	16.5
Agree	83.2	79.7	73.8	82.6

Exhibit D.15
(continued)

MIDWEST	Site 1		Site 2	
	Prenatal Survey (n=216)	Postpartum Survey (n=233)	Prenatal Survey (n=216)	Postpartum Survey (n=239)
The staff was helpful				
Strongly agree	36.6%	42.6%	28.3%	38.9%
Agree	61.6	54.2	68.7	60.2
The staff made me wait too long				
Strongly disagree	20.4	16.7	9.4	9.6
Disagree	71.3	70.8	76.4	69.5
I was respected as an individual				
Strongly agree	30.1	34.7	22.8	28.9
Agree	68.1	61.6	74.3	68.6
Things were explained in a way I could understand				
Strongly agree	33.3	33.3	26.6	29.7
Agree	65.7	64.3	70.0	68.2
The staff was warm and friendly				
Strongly agree	33.3	36.1	23.6	27.2
Agree	66.7	60.2	72.5	67.8
My questions were answered				
Strongly agree	28.2	34.7	20.2	24.7
Agree	70.4	62.0	78.1	74.5
I felt satisfied when I left the WIC clinic				
Strongly agree	31.5	36.1	24.5	25.5
Agree	65.7	59.7	72.1	71.1
I felt confused when I left the WIC clinic				
Strongly disagree	36.1	30.6	22.8	22.6
Disagree	61.1	66.7	74.2	75.7
Some of the advice I received contradicted what my doctor told me				
Strongly disagree	14.4	8.3	7.3	5.4
Disagree	70.8	55.6	69.1	47.7
The counselors helped me decide how to feed my baby				
Strongly agree	4.2	6.9	3.9	3.8
Agree	32.4	42.6	22.3	32.2
The information was tailored to my individual needs				
Strongly agree	10.7	13.4	9.4	9.6
Agree	74.5	75.5	78.1	83.7
The information was helpful				
Strongly agree	22.7	29.2	15.0	15.9
Agree	73.2	66.8	82.8	81.2

Exhibit D.16**Factor Loadings for Individual Satisfaction Statements**

Statement	Factor Load	
	Prenatal Survey	Postpartum Survey
The staff was helpful	.66	.64
The staff made me wait too long	-.34	-.35
I was respected as an individual	.70	.75
Things were explained in a way I could understand	.76	.76
The staff was warm and friendly	.79	.77
My questions were answered	.82	.84
I felt satisfied when I left the WIC clinic	.80	.87
I felt confused when I left the WIC clinic	-.51	-.56
Some advice I received was different than my Dr's	-.21	-.14
The counselors helped me decide how to feed my baby	.13	.18
The information was tailored to my needs	.49	.50
The information was helpful	.60	.65

Exhibit D.17

Regression Coefficients for Model of Satisfaction as a Function of WIC Nutrition Education Experiences: Prenatal Survey

Statement of WIC Experience	Coefficient	Std. Error
Counselors helped me decide how to feed baby ¹	0.37**	0.03
Staff did not make wait too long ²	0.19**	0.02
Advice was not different from advice given by physician ³	0.17**	0.02
Thought written material was useful	0.18**	0.04
Did not read/receive written materials	0.06	0.06
Had no outstanding issues to discuss	0.15**	0.03
Was not referred to other programs/services	-0.06**	0.02
Met one-on-one with nutritionist	-0.01	0.01
Met one-on-one with other WIC staff	0.05**	0.01
Did not learn anything from WIC	-0.03**	0.01
No longer receiving WIC benefits	-0.00	0.04

¹Strongly agree with statement.

²Strongly disagree with statement: "The staff made me wait too long."

³Strongly disagree with statement: "Some of the advice I received from WIC was different than the advice my doctor gave me."

* Statistically significant at the .05 percent level.

** Statistically significant at the .01 percent level.

Exhibit D.18

Regression Coefficients for Model of Satisfaction as a Function of WIC Nutrition Education Experiences: Postpartum Survey

Statement of WIC Experience	Coefficient	Std. Error
Counselors helped me decide how to feed baby ¹	0.39**	0.03
Staff did not make wait too long ²	0.27**	0.02
Advice was not different from advice given by physician ³	0.16**	0.03
Thought written material was useful	0.21**	0.04
Did not read/receive written materials	0.06	0.05
Had no outstanding issues to discuss	0.09**	0.02
Was not referred to other programs/services	-0.04*	0.02
Met one-on-one with nutritionist	-0.03*	0.01
Met one-on-one with other WIC staff	0.03*	0.01
Did not learn anything from WIC	-0.03**	0.01
No longer receiving WIC benefits	-0.01	0.02

¹Strongly agree with statement.

²Strongly disagree with statement: "The staff made me wait too long."

³Strongly disagree with statement: "Some of the advice I received from WIC was different than the advice my doctor gave me."

* Statistically significant at the .05 percent level.

** Statistically significant at the .01 percent level.

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